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AMERICAN MEDICINE'S REPORT TO THE NATION

PRESIDENT'S ADDRESS

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In reaching the successive milestones of life, men reckon their progress in different ways. Some put ahead of everything else their achievements in business or professional activities; others value most the blessings of home and family. Still others weigh strongest their accomplishments in terms of benefit to mankind. But, no matter how the reckoning is done, it is my belief that humbleness and abiding faith in God should be the common denominators. It is in this spirit that I approach the position of honor assigned me by my colleagues in the medical profession.

High office, whether it be in government or in private life, carries with it certain basic obligations. These obligations are not only to those who elect you. The exercise of official duty should extend beyond the narrow confines of selfish interest and should be dedicated to the public good. In serving the American Medical Association as president for the coming year, I shall be representing an organization that has a long and honorable history of service in the public interest. In taking the solemn oath of office tonight, I pledge myself to carry on this tradition of public service. To succeed I will need your wholehearted cooperation and the divine guidance of God, for which I pray.

This evening I should like to present American Medicine's Report to the Nation. In a golden era of tremendous medical advances, which has already brought the elimination or control of many deadly diseases and the development of surgical techniques that once were undreamed of, the past year stands out as one of exceptional progress in medical science. What parent did not thrill at the news that trials involving 55,000 children in poliomyelitis-plagued communities showed gamma globulin from human blood could at least temporarily prevent the onset of the dreaded paralytic type of the disease? And soon after came the electrifying announcement that doctors were in the process of developing a successful vaccine against all three of the known poliomyelitis viruses. Many months of cautious and painstaking experimentation are still required before the vaccine can be made available for general distribution, but the reports published are most heartening. Because of production difficulties, gamma globulin will be given limited distribution through the Office of Defense Mobilization for some time to come. However, it will be made available wherever drastic, emergency preventive measures are indicated.

A moment ago I made passing mention of great strides in surgical techniques. This fact was brought home in dramatic fashion last December at the University of Illinois medical school in Chicago. With literally the attention of the world focused on the surgical amphitheater at the university, a highly skilled team separated the 15-month-old Brodie Siamese twins, who had been joined at the head. Only twice before in medical history had separation of Siamese twins joined at the cranium been attempted, and in both cases the twins died before the separation was completed. Today one of the Brodie twins is alive and apparently destined to lead a relatively normal life.

Operations upon the heart, brain, lungs, and stomach and other vital organs, impossible 25 years ago, are now being accomplished with safety and success. Advances in orthopedic surgery have brought happiness and independence to many who were crippled, and the light of hope is seen in the darkness of cerebral palsy. Patients walk about the wards of our great hospitals the day of major surgery and are discharged in a week. Surgery and radiology are producing an increasing number of cures in cancer cases.

In the immediate future, more men and women will be able to live and work long after 65 years of life. Today we find it necessary to review our estimates and definitions of old age and human usefulness.

The horizons of medicine are unlimited! Research workers are making magnificent progress in all fields. Such spectacular devices as the mechanical heart and lung and the mechanical kidney demonstrate man's ability to ferret out the long-hidden secrets of the human body. I can predict with confidence that the doctor of the future will do much of his work in the field of disease prevention.

Unfortunately, there is one disease for which we can never hope to develop a vaccine, and that is preventable

Read before the 102nd Annual Meeting of the American Medical Association, New York, June 2, 1953.

accidents. Last year alone, according to the National Safety Council, 96,000 Americans died as the result of accidents of all types. In the same period, one out of every 16 persons in the United States suffered a disabling injury, or a total of 9,700,000 persons — roughly the combined population of metropolitan New York. A population approximately the size of Atlanta, Ga., 350,000 persons, was left permanently disabled by injuries. Aside from the pain and mental anguish, the cost of these accidents amounted to $8,300,000,000 in medical expense, overhead costs of insurance, property damage, and lost wages. The accident problem must be solved, for preventable accidents are a waste of money, time, and medical talent that could be more effectively utilized in the prevention and elimination of disease.

GROWTH OF ORGANIZED MEDICINE

Much of the progress of medical science in this country coincides with the growth of organized medicine. One hundred and six years ago, scattered medical societies throughout the nation joined hands to form the American Medical Association, thereby setting up a democratic procedure for elevating the standards of the medical profession on a uniform basis. Today the Association is composed of 140,000 doctors, who express the medical needs of their respective communities through the representatives they elect to the A.M.A.'s House of Delegates. They spend 10 million dollars each year studying and working in the fields of rural health, industrial health, the availability of physicians, medical care for the armed forces, civil defense, medical education, hospitals, nursing, mental diseases, health education, exposing quacks and fakers, and seeking ways to help the chronically ill and those who have difficulty in paying for medical care.

We have encouraged the development of voluntary prepaid health insurance plans to assist the individual and family in meeting the unexpected costs of sickness. Such plans are being constantly improved to include protection against long-term, disabling illness or injury and to provide coverage without regard to age. The growth of prepaid medical and hospital expense coverage is unparalleled by comparison with any of the spectacular advances made in the history of insurance. There are more than 90 million Americans now carrying hospital, surgical, and medical insurance. Add to this total the persons covered by industrial insurance, veterans' benefits, and local, state, and federal custodial programs as well as those cared for in the great charity hospitals throughout the country and we are justified in questioning the motives of those who would place all of our sick under government dictation.

Recent figures gathered for the Federal Reserve Board by the Survey Research Center of the University of Michigan indicate that 80% of American families have no medical debt at all. Seventeen per cent have medical debts of $2 to $200, an amount that could normally be met without too much difficulty. Only 3% had medical obligations in excess of $200.

Doctors have been criticized by many. We make no claim to sainthood. We have in our midst a certain number, perhaps 3 to 5%, who are not worthy members of an honorable profession. We have established mediation committees in all 48 states to hear patient complaints and try to work out a solution. Here and now I call upon all county medical societies to continue to expel from our ranks those who are unethical, dishonest, and unfair. We cannot protect or condone the few who bring disgrace upon us. We owe to the American people protection from the small number of greedy and godless physicians who flagrantly violate the noble traditions of the medical profession. But let us do this job in an orderly fashion, making speedy, effective use of the disciplinary machinery already available in our medical societies. By thus eliminating the wrongdoers we will restore the public faith in the 95% of ethical doctors whose reputations have been unjustifiably tarnished.

MEDICAL EDUCATION

We are making great progress in the expansion and building of medical schools, which is steadily increasing the supply of physicians. Since 1929 the supply of doctors has been increasing consistently faster than the growth of the population. In the past decade the number of graduates from medical schools increased more than 19%. There is every indication that there will be an additional increase of 25% in the number of graduates over the next 10 years.

Plans are now well under way for the establishment of several new medical schools. In only the last three years, nearly 242 millions of dollars were spent for new construction to expand medical school facilities in the United States. The American Medical Association always has, and will continue to encourage sound expansion of medical schools and their educational programs. Last year more than 3 million dollars was given by 37,000 doctors in direct support of medical education. If contributions to building funds and for other special purposes were included, these figures would be even larger. A substantial portion was raised through the American Medical Education Foundation and the National Fund for Medical Education. I appeal to all doctors and business and industry to support these two fund-raising organizations as a means of avoiding federal subsidy of medical education with its potential threat of ultimate socialization. The trend is away from centralized government domination. Let us keep it that way by supporting voluntary, private activities at all levels.

SUPPLY OF PHYSICIANS

Today, with one doctor for every 730 persons, the United States has more practicing physicians than any other country in the world. Those who have carefully studied complaints of physician shortages have come to the conclusion that shortages are caused not by a nationwide lack of doctors, but primarily by faulty distribution due to professional factors related to their practice. They feel they cannot practice the kind of medicine they want to without modern equipment. Since they cannot finance such equipment in their early years of practice, they tend to settle in metropolitan areas where up-to-date facilities are readily available. To help resolve this serious problem, physician placement services have been put in operation by medical societies in most states. Strongly supported by the American Medical Association, these placement services are helping to assure an equitable distribution of doctors throughout the nation. Under this

plan, many rural communities are building offices or small hospitals and equipping them with modern medical apparatus as inducements for young doctors. In Kansas, for example, this procedure attracted 67 new doctors to communities of 2,500 or less persons in only two years. Many of these towns had not had a doctor for years.

We have been and will continue to be concerned when patients tell us they have difficulty in reaching a doctor in an emergency or during night hours. In 1948 there were only 60 night and emergency telephone centers sponsored by county medical societies. Last year this total had grown to 650. And these centers are continuing to increase. Every medical society in the country should initiate and finance this type of service.

Likewise, every family should select for itself a family physician in whom it has confidence and whose advice will be followed in emergencies and when seeking the services of specialists. In establishing this family-physician relationship there should be no hesitancy in discussing fees. Every patient should feel perfectly justified in requesting a frank discussion of fees with his doctor. Mutual understanding of the economics of medical care is most important, and I would like to encourage both patient and physician to develop such an understanding.

I have told you tonight of some of our activities in public service to the nation and of the great progress made in American medicine. Time will not permit a more detailed description of our activities, but these are a matter of record available for the perusal of all.

We shall continue to support all programs for the good of the public health, as we have done over the years. With but one exception there has been no major federal health law enacted that was not sponsored or supported by the American Medical Association, and the one exception turned out to be such a failure that Congress refused to renew the act when it expired.

We shall fight with all of our strength matters that are not in the public interest. The American Medical Association throughout its history has been a champion of sound progress in medicine. It has had to fight many battles against quackery, against political interference, and against slipshod medical training and practice. An organization cannot be a strong, fearless leader without creating bitter enemies and staunch supporters. We have both today.

If anyone can present a plan of medical care or a way of life that is an improvement on the American way, we shall listen with attentive ear. But we will not compromise American freedom and ideals. Nor are we disposed to support anything but the best in medicine. In our care is the health of the American people. Its improvement is our sole and constant goal. We shall be true to this trust.

407 Madison Ave.

HAZARDS OF LOBOTOMY

STUDY OF TWO THOUSAND OPERATIONS

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Lobotomy for the relief of mental disorders and pain has become such a widely used procedure that a statistical analysis of a substantial number of cases seems worth while as a means of clarifying the dangers inherent in this type of procedure. This paper deals with my personal experience, at first with Watts [1] and later alone or with Williams,[2] over the 16 year period from 1936 to 1952. In this report no attempt is made to evaluate the different types of operations from the standpoint of effectiveness but only from that of safety. The question concerns not only operative or postoperative death but also later fatalities from causes not directly linked with surgery and also complications and sequelae of lobotomy that have impaired the social effectiveness of the patient. Finally, some figures are given to show the hazards of delay in treating patients by this method.

The present survey covers 1,863 patients operated on up to October, 1952. Secondary operations numbered 142, so that the total number of operations performed is 2,005. These have been divided into two main groups, the prefrontal lobotomy series comprising 624 patients and 702 operations and the transorbital lobotomy group comprising 1,239 patients and 1,303 operations. The later history of the prefrontal lobotomy series is almost completely known owing to an extremely complete follow-up study, only two patients having been lost to follow-up during three years following the operation. The first 500 patients in the transorbital lobotomy series have been followed for at least two years and another 200 patients for one year, with only a few not heard from. During 1952, transorbital lobotomy was performed on a large scale, and only the immediate complications are known.

FATALITIES

Table 1 summarizes the causes of operative fatality; the rates are 3.6% in prefrontal lobotomy and 1.7% in transorbital lobotomy. Most of the deaths were due to hemorrhage. Prefrontal lobotomy is safer, in this respect, since the trephine openings can be enlarged, and attempts can be made at controlling the hemorrhage. Nevertheless, hemorrhages have resulted in death in four patients following this procedure. Hemorrhages from transorbital lobotomy arose mainly from small arteries at the base of the frontal lobe, more rarely from the ascending branch of the middle cerebral artery lying in the sulcus between the insula and the frontal operculum, and only once from a branch of the anterior cerebral artery. Further examination of the data shows that fatal hemorrhage

From the Department of Neurology and Neurological Surgery, George Washington University.

1. Freeman, W., and Watts, J. W.: Psychosurgery in the Treatment of Mental Disorders and Unbearable Pain, ed. 2, Springfield, Ill., Charles C Thomas, Publisher, 1950.

2. Freeman, W., and Williams, J. M.: Lesions of Transorbital Lobotomy, A. M. A. Arch. Neurol. & Psychiat. **66**: 191-198 (Aug.) 1951.

occurred more frequently in patients operated on under thiopental (Pentothal) (2.8%) than in those operated on under the usual electroshock "anesthesia" (1%). Studies have shown that electroconvulsive shock hastens clotting of the blood.[3] There were no operative fatalities in 44 patients in whom local anesthesia was employed.

TABLE 1.—*Operative Fatalities*

Cause of Death	Prefrontal Lobotomy		Transorbital Lobotomy	
	No.	% of Total Group	No.	% of Total Group
Hemorrhage	4	0.6	15	1.2
Misdirected incision	10	1.6	1	0.1
Shock and/or hyperthermia	4	0.6	2	0.2
Infection	4	0.6	1	0.1
Suffocation	1	0.1	1	0.1
Intestinal perforation	1	0.1	0	0
Total	24	3.6	20	1.7

Deaths from misdirected incisions, either in the immediate postoperative period or after a delay of weeks or even months, have been reported by McLardy.[4] They accounted for 10 deaths in the prefrontal lobotomy series and only 1 in the transorbital lobotomy series. Deaths from this cause are accompanied by great inertia, with fever, edema, and trophic disturbances in the lower limbs, terminal uremia, and death from pulmonary atelectasis and hypostatic pneumonia. Sometimes there is hemiplegia or tetraplegia owing to injury to the motor cortex and underlying fiber connections.

Operative shock, with dehydration and hyperthermia, occasionally causes death, especially in hot weather. Infection of the wound proved fatal in four patients who had prefrontal lobotomy. The only death from this cause in the transorbital lobotomy series occurred when the orbital plate fractured into the frontal sinus. The fistula permitted ascending infection through the nose. In dealing with unruly patients, transorbital lobotomy is preferable, because the patient cannot possibly contaminate his wounds. Death from suffocation occurred from strangulation on a piece of meat in a patient who was extremely inert after major lobotomy and from strangulation on a swollen carcinoma of the tongue in another patient within an hour after transorbital lobotomy. In patients threatened with respiratory obstruction, lobotomy should be done under local anesthesia. Death followed prefrontal lobotomy for thalamic syndrome in a patient who was given tribromoethanol (Avertin) rectally, with resultant perforation of a diverticulum of the bowel and spreading peritonitis.

Table 2 summarizes the causes of nonoperative fatality. Outstanding among the prefrontal lobotomy patients is death from heart disease. This probably reflects the longer period of observation of the prefrontal lobotomy patients. The slightly higher incidence of deaths from malignant disease in the transorbital lobotomy series reflects the more frequent use of the minor operation [5] in relieving the pain and distress of patients with terminal carcinoma. It was found that major lobotomy was unnecessarily drastic in such cases, although the relief of suffering was gratifying by either method. Pneumonia occurring long after operation accounted for five deaths in the prefrontal lobotomy series; all five patients were severely handicapped, and most were subject to epileptic seizures. Tuberculosis proved fatal in three patients long after operation. In a number of similar patients, prefrontal lobotomy not only gave relief from the mental disorder but also resulted in arrest of the pulmonary disease. The period of observation of tuberculous patients subjected to transorbital lobotomy is as yet too short for evaluation of these results. Attacks of bronchial asthma proved fatal to two patients 11 months and two years, respectively, after transorbital lobotomy. The asthma antedated the operation.

Accidents accounted for seven deaths, all but one in the prefrontal lobotomy series. One of these patients was said to have fainted and fallen from a window, another had an epileptic seizure while swimming and was drowned. One elderly woman kicked too vigorously, fell, and broke her hip, death occurring soon after. Another wandered away from the recreation ground and died of exposure. An alcoholic patient, subject to seizures, crashed his automobile. Two women, one from each group, died as a result of scalds. The patient in the transorbital series had had epilepsy since childhood and was operated on successfully in middle life for relief of a paranoid state. She had a seizure in her bathtub while the hot water was running. Exact information on the other patient is lacking, but her death occurred in a nursing home. Suicide accounted for 9 deaths in the total series of 1,819 patients surviving operation. These represented obvious failures to relieve depression. It is worthy of note that no suicides have occurred in more than 1,000 patients treated by application of the deep frontal cut in transorbital lobotomy, which was introduced in 1948.[6]

TABLE 2.—*Nonoperative Fatalities*

Cause of Death	Prefrontal Lobotomy, Survivors—690 Patients		Transorbital Lobotomy, Survivors—1,219 Patients	
	No.	% of Total Group	No.	% of Total Group
Heart disease	24	4.0	8	0.7
Malignant disease	11	1.8	32	2.6
Cerebrovascular disease	6	1.0	0	0
Pneumonia	5	0.8	0	0
Tuberculosis	3	0.5	0	0
Asthma	0	0.0	2	0.2
Accident	6	1.0	1	0.1
Suicide	4	0.7	5	0.4
Others	2	0.3	1	0.1
Total	61	10.1	49	4.1

COMPLICATIONS AND SEQUELAE IN SURVIVORS

Fifteen patients had temporary hemiparesis; in one persistent spastic paralysis of the left arm developed owing to a misplaced incision, but she has been steadily employed for more than 15 years. In one patient in the prefrontal lobotomy series laceration of the anterior

3. Altschule, M. D.; Restaino, R. M., and Siegel, E. P.: Blood Clotting in Patients with Mental Diseases Before and After Treatment, A. M. A. Arch. Neurol. & Psychiat. **68**: 561-565 (Oct.) 1952.

4. McLardy, T.: Uremic and Trophic Deaths Following Leucotomy: Neuro-Anatomical Findings, J. Neurol., Neurosurg., & Psychiat. **13**: 106-114 (May) 1950.

5. Williams, J. M., and Freeman, W.: Transorbital Lobotomy in the Relief of Intractable Pain, A. M. A. Arch. Surg. **63**: 203-210 (Aug.) 1951.

6. Freeman, W.: Transorbital Leucotomy: The Deep Frontal Cut, Proc. Roy. Soc. Med. (suppl.) **42**: 8-12, 1949.

cerebral artery occurred, resulting in paralysis of both lower limbs. He survived this extremely serious accident, although he was bedridden for a long time. He remains in a mental hospital, where he shows incontinence, convulsions, the "frontal lobe syndrome," and spastic weakness of the lower limbs. Eight instances of temporary hemiparesis were encountered in the transorbital lobotomy series, an incidence of 0.6%. This and other physical complications are summarized in table 3.

Convulsions occurred in 25.6% of patients in the prefrontal lobotomy series as compared with 1.6% of those in the transorbital lobotomy series. There are however, certain factors that may explain some of this great discrepancy. The most obvious is the shorter period of observation in the transorbital lobotomy group. On the other hand, a number of patients in both series experienced convulsive episodes prior to lobotomy. Some had them only subsequent to electroconvulsive shock therapy in the months and years preceding operation. Also, some of the patients who survived operation but died later of other causes manifested convulsive seizures. A previous study of the prefrontal lobotomy series by Watts and me [1] showed the importance of multiple operations and additional trauma to the cortex in the incidence of seizures. At the time of that study, the incidence of postoperative convulsive seizures was 7% for a single uncomplicated operation but 47% for multiple operations. In about 40% of the 172 patients with convulsive seizures they were adequately controlled, but in another 40% the seizures were repeated and often sufficiently severe to interfere considerably with a satisfactory level of achievement. Thus the occurrence of convulsive seizures long after lobotomy must be considered one of its hazards. The low incidence of postoperative epilepsy in the series of patients treated by transorbital lobotomy is an important point in favor of this operation.

The occurrence of urinary incontinence is almost the rule following prefrontal lobotomy, but it persisted for more than a month in almost 20% of the patients in the group treated by Watts and me. This figure was cut to 2.5% in the transorbital lobotomy series. In addition to those in whom urinary incontinence finally cleared up, there were 7% with persistent incontinence in the prefrontal lobotomy series as compared with 0.7% in the transorbital lobotomy series. In these patients the incontinence was thought to be due to the operation rather than to be a persistent symptom of psychosis. Patients successfully treated by lobotomy, that is, with relief of the psychosis, often had incontinence before operation but later regained urinary control.

The breaking of instruments during operation occurred in six instances, twice in the prefrontal operation with the Moniz instrument and four times with the transorbital leukotome. When the operation was done through burr holes with a core-cutting instrument, the steel band snapped and had to be removed by enlarging the opening and extracting the instrument, resulting in considerable laceration of the white matter. The transorbital leukotome broke when a thick orbital plate prevented proper mobilization of the instrument. In two of these instances, only a short piece of the tip was left embedded in the bone and remained there harmlessly for the two years that each patient was followed. In a third case, previously reported,[7] laceration of the eyeball occurred when the instrument broke, and the fragment was removed through a craniotomy opening. Later on, because the patient had not improved, a neurosurgeon completed the lobotomy on the affected side. In the fourth patient, enough of the shaft of the instrument protruded into the soft tissues of the orbit that the neurosurgeon called in consultation was able to withdraw it after retracting the eyelids and making a minute incision through the conjunctiva. The interval of three weeks between the accident and the removal of the fragment allowed for some resorption of the bone so that removal was simple. The patient has done well.

Temporary cerebrospinal rhinorrhea occurred in three patients. Drainage continued in all for two or three weeks, and all experienced a meningeal reaction without bacterial infection. In one patient the fistula reopened three weeks after operation when he was in an airplane landing. After admission to the hospital, he was given some nose drops for treatment of his "sniffles." By evening his temperature was 104 F, and he presented the picture of acute meningitis. No organisms were seen or cultured, and the condition, including the rhinorrhea, cleared up in three days.

TABLE 3.—*Physical Complications and Sequelae in Survivors*

Complications and Sequelae	Prefrontal Lobotomy: Survivors—600 Patients		Transorbital Lobotomy: Survivors—1,219 Patients	
	No.	% of Total Group	No.	% of Total Group
Hemorrhage with paralysis	9	1.4	8	0.6
Transient	7	1.2	8	0.6
Persistent	2	0.2	0	0.0
Incontinence	145	24.2	31	2.5
Transient	104	17.3	23	1.9
Persistent	41	6.8	8	0.7
Convulsions	154*	25.6	18†	1.6
Rare	59	9.8	7	0.6
Infrequent	29	4.8	6	0.5
Frequent	66	11.0	5	0.5
Breaking of Instrument	2	0.3	4	0.3
Cerebrospinal rhinorrhea (temporary)	0	0	3	0.2
Total.....	310	51.5	64	5.2

* Includes 14 patients with preoperative epilepsy.
† Includes 10 patients with preoperative epilepsy.

UNDESIRABLE SOCIAL SEQUELAE

Table 4 summarizes the undesirable social sequelae in the 1,819 surviving patients. The "frontal lobe syndrome" has occurred with sufficient prominence to be a disturbing factor in social adjustment in 9.3% of patients in the prefrontal lobotomy series and in only 0.5% of those in the transorbital series. At what point the difficulties of adjustment are sufficiently great to warrant designation in this category depends to a considerable degree on the family situation. Some personality change occurs in almost every patient operated on, either by the prefrontal or the transorbital approach. Some such change is necessary to protect the patient from falling

7. Freeman, W.: Transorbital Lobotomy: The Problem of the Thick Orbital Plate, Am. J. Psychiat. **108**: 825-828 (May) 1952.

again into his former illness. The problem, then, is one of degree. It has been observed that the farther posterior the incisions are made, the greater the incidence of undesirable social characteristics. At the same time, depraved tastes and deplorable manners in a patient treated by this method may stem from the deterioration that was already present at the time of the lobotomy. Such schizophrenic defect states are by no means rare after operation; indeed, they may become all the more glaring because the patient is no longer necessarily confined to a "quiet" room but is able to mingle with other patients, and his peculiarities come more under scrutiny. The "frontal lobe syndrome" is compounded of indolence, carelessness, rudeness, profanity, and "the loud laugh that speaks the vacant mind." Inadequate social adjustment directly attributable to lobotomy occurred in 56 patients in the prefrontal lobotomy series and in 6 in the transorbital lobotomy series. In the latter it followed a prolonged state of inertia, probably due to nonfatal hemorrhage into both frontal lobes.

Lobotomy is notable in its effect on the appetite. Obesity, that is, a gain of 50 lb. (22.7 kg.) or more, occurred in 136 prefrontal lobotomy patients and in 18

TABLE 4.—*Social Complications and Sequelae in Survivors*

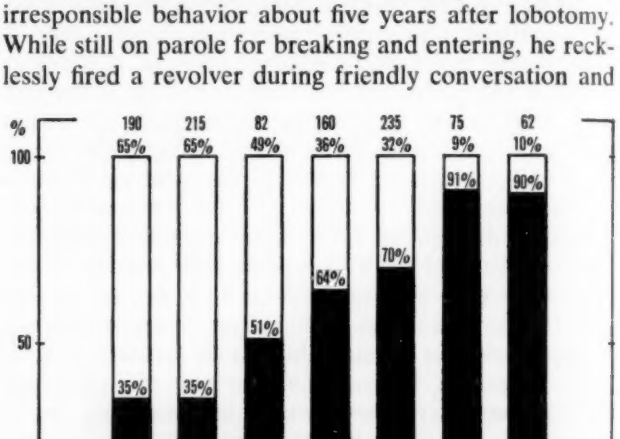
	Prefrontal Lobotomy		Transorbital Lobotomy	
	Survivors—600 Patients		Survivors—1,219 Patients	
Complications and Sequelae	No.	% of Total Group	No.	% of Total Group
Frontal lobe syndrome	56	9.3	6	0.5
Obesity	136	22.7	18	1.5
Alcoholism	6	1.0	8	0.6
Illegitimate pregnancy	4	0.7	5	0.4
Homicide	1	0.1	0	0
Total	203	33.8	37	3.0

transorbital lobotomy patients. Many of the patients later returned to normal weight; for example, a patient who was operated on in 1936 and again in 1937 gained nearly 100 lb. (45.4 kg.) to a total weight of 212 lb. (96.1 kg.), but 10 years after the operations she began to lose weight and now weighs 124 lb. (56.2 kg.). Loss of weight is a common symptom in some of the psychoses, so that gain in weight may occur with recovery. One of our early patients, in the course of her schizophrenic psychosis, experienced a loss in weight from 180 to 85 lb. (81.6 to 38.6 kg.) and, after successful lobotomy, more than doubled her weight to 218 lb. (98.9 kg.). She has continued to be obese. Gain in weight is much more likely to occur after prefrontal lobotomy than after transorbital lobotomy.

Sexual irregularities are most socially reprehensible when they lead to illegitimate pregnancy. Sexual behavior after lobotomy has been studied by others,[8] and there are several instances in our records of lack of control in the expression of the personality at the sexual level. Nevertheless, lobotomy seems to reduce the impulse of the patient to do things differently. Patients tend to conform to the standards that have been set up in their own social medium. Illegitimate pregnancy has been observed in nine patients, not excessive considering the alarming potentialities expressed in the concept of the "frontal lobe syndrome."

Alcoholism as a sequel to lobotomy has also been observed infrequently. In view of the early experience of Watts and myself in this field, patients who resolve their personality conflicts by excessive use of alcohol are considered unfit subjects for operation. Greenblatt, Arnot, and Solomon [9] have found, however, that about as many alcoholics are relieved of their addiction as are later confirmed in it.

Commission of major crimes after lobotomy is rare. In two instances of homicide reported to the author, the patients (operated on elsewhere) were obviously relapsing into their paranoid schizophrenia and were promptly returned to hospitals. One of the patients in the earlier series,[1] who had relief from a severe anxiety state, showed irresponsible behavior about five years after lobotomy. While still on parole for breaking and entering, he recklessly fired a revolver during friendly conversation and



Effect of length of previous hospitalization on mental and social status following lobotomy. (Figures at top indicate total number of patients in each group, and periods at bottom indicate length of preoperative hospitalization.)

shot the owner of the gun through the heart. Other crimes, occasionally reported in the newspapers, seem to indicate that the lobotomized patients return to their particular forms of expression. There are no reports of vicious or savage behavior aside from those of psychotic patients who have relapses after lobotomy.

HAZARD OF DELAY

The hazard of performing lobotomy for the relief of mental disorders is placed in its proper perspective by noting the hazard of not performing the operation, the hazard of delay. The accompanying chart is based upon a study of more than 1,000 patients who have been followed beyond the time of stabilization (one year for transorbital lobotomy and two years for prefrontal lobotomy) for periods ranging up to more than 5 years after transorbital lobotomy and more than 15 years after prefrontal lobotomy. In this chart the good results have been plotted against the total duration of hospitalization before lobotomy was performed. By good result is meant

8. Levine, J., and Albert, H.: Sexual Behavior After Lobotomy, J. Nerv. & Ment. Dis. **113**: 332-341 (April) 1951.

9. Studies in Lobotomy, Greenblatt, M.; Arnot, R., and Solomon, H. C., editors, New York, Grune & Stratton, Inc., 1950.

that the patient not only is out of the hospital but is actively engaged in some type of useful activity, earning a living, keeping house, or going to school. The black columns represent all those patients still hospitalized as well as those who are able to remain at home but in a dependent condition. This chart shows there are two chances out of three of returning to useful activity for patients treated by lobotomy who have had less than six months' hospitalization. Chances are about even for those with one year of hospitalization, but from then on they decrease considerably, so that of patients with chronic illness only 1 in 10 can expect to return to some useful work outside the hospital.

SUMMARY

The hazards during operation and undesirable sequelae of prefrontal lobotomy (702 operations) and transorbital lobotomy (1,303 operations) are discussed. While there is slightly higher risk of fatal hemorrhage in transorbital lobotomy, the incidence of other causes of operative fatality are so low that the mortality is only half that for prefrontal lobotomy. Long-term follow-up in the series of patients treated by prefrontal lobotomy by Watts and myself shows a wide distribution of causes of death not linked with operation. There is a preponderance of deaths from heart disease. On the other hand, in the transorbital lobotomy series a larger number of late deaths are attributable to malignant disease. The explanation lies in the fact that transorbital lobotomy is an effective palliative measure for the pain and suffering of the terminal cancer patient, while prefrontal lobotomy is too drastic a measure for this purpose. Physical complications, such as hemiparesis, seizures, and incontinence, are 10 times as prevalent after the major operation as after the minor transorbital operation. Socially undesirable traits also are 10 times as common after prefrontal lobotomy as after transorbital lobotomy. Because of the high incidence of fatalities and complications following prefrontal lobotomy, the use of this procedure has been almost abandoned in the past three years. Transorbital lobotomy, on the other hand, has become the method of choice. The hazard of delay is an important one in lobotomy of any kind. Chronic mental disorder is a serious handicap to social readjustment of the patient who has undergone lobotomy.

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ATYPICAL TUBERCULIN REACTIONS

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The Mantoux test is considered to be positive if in 48 hours an area of infiltration of at least 5 mm. diameter is present at the site of the intracutaneous injection. There is no definite agreement as to the minimum size of the reaction that is to be considered positive. Some investigators will not call a Mantoux test positive unless the diameter is 10 mm. or more. The reaction, as a rule, persists or even becomes larger in 72 hours, and some physicians prefer to do the reading in 72 rather than in 48 hours. Areas of erythema without induration that appear in 24 hours but fade away in 48 hours are generally considered false positive reactions and are not uncommonly seen when larger doses of old tuberculin or purified protein derivative are used. As far as purified protein derivative is concerned, the specificity of even typical positive tests is doubted if the second strength (0.005 mg.) is being used.

During the past several years I have encountered a number of cases in which the diagnosis of tuberculosis was beyond any doubt and in which, nevertheless, atypical tuberculin reactions were observed. These atypical tests differed from one another in certain respects, but they had one common feature; the reaction, having started some hours after the injection, reached its peak in 24 hours and no longer was evident at 48 hours. The reaction in these cases usually was negative to small doses of tuberculin (old tuberculin, 1:1,000, or purified protein derivative, first and intermediate strengths), whereas the use of larger amounts (old tuberculin, 1:100, and purified protein derivative, second strength) resulted in the formation of a very large, somewhat elevated area of erythema with a small central zone of induration in 24 hours.

REPORT OF CASES

CASE 1.—An 8-month-old boy, when first seen in April, 1936, had had elevated temperature (between 38 and 39 C, rectal) for over three weeks, with some restlessness and anorexia and no increase in weight for six weeks. Physical examination and x-ray examination of the chest disclosed no abnormalities. There was a history of a negative Pirquet test at the age of 5½ months. A tuberculin test with old tuberculin, 1:1,000, showed an area of reddening with very slight induration of 15 mm. diameter in 24 hours, which completely waned in 48 hours and did not reappear subsequently on daily observation. The temperature gradually came down to normal, and complete well-being was regained within the next three weeks. The Mantoux test with 1:1,000 tuberculin was repeated in two weeks and showed exactly the same type of reaction. Four weeks thereafter another chest roentgenogram was made and revealed marked right hilar enlargement with an adjacent oval-shaped area of uniform density of approximately 3 by 2 cm. in size in the right midfield. A Mantoux test with 1:1,000 tuberculin done on the same day resulted in a reaction similar to the two previous ones, except that the diameter of the area of erythema and slight infiltration had increased to 20 mm. The fourth Mantoux test, which was done two months after the first one, resulted in an entirely typical reaction, with the area of marked induration and erythema reaching its peak of 12 mm. in 72 hours.

CASE 2.—A 7-year-old boy had a few enlarged nontender cervical lymph nodes, one of which was slightly draining, in February, 1930. As the center of one of these glands was soft, it was aspirated. Approximately 0.5 cc. of greenish purulent matter was obtained, in which typical acid-fast bacilli were found. He had a positive tuberculin test (2+ with old tuberculin, 1:1,000). Ultraviolet light was applied to the neck, and there was an uneventful recovery within a few months, with no subsequent recurrence of lymph node enlargement. In

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October, 1931, 21 months later, a small right pleural effusion developed that was aspirated twice, yielding clear amber fluid with 90% mononuclears in its sediment. No organisms were found in the pleural fluid on smear; culture was not made. The tuberculin test was repeated and showed an 18 by 18 mm. area of reddening, with a 4 by 4 mm. central zone of induration that could hardly be noted in 48 hours. One week later the test was repeated with old tuberculin, 1:1,000, showing a 30 by 30 mm. area of erythema with a 7 by 7 mm. zone of infiltration in 24 hours, and again waning in 48 hours. I did not see this patient thereafter until 1937, when he was brought to the office because of "nervousness." X-ray examination of the chest showed no abnormalities, and there were no enlarged lymph nodes. Tuberculin tests (old tuberculin, 1:1,000 and 1:100) were entirely negative.

CASE 3.—A 31-year-old white man was admitted to the Veterans Administration Hospital in Walla Walla in March, 1949, for treatment of pulmonary tuberculosis. The pulmonary lesion was discovered in October, 1948, on a preemployment roentgenogram, but review of the Army separation film of November, 1945, revealed that there were increased perihilar markings in the left midfield already at that time. The admission roentgenogram showed linear and partially confluent nodular densities in both perihilar regions, which were heavier on the left side than on the right. A test with purified protein derivative of intermediate strength was positive (1+). One gastric culture of May, 1949, was positive, showing only a few colonies; these were inoculated into a guinea pig with positive results. Thereafter, innumerable smears, sputum, and gastric cultures were negative persistently. In March, 1950, exploration of the left supraclavicular region was made and a small lymph node found, the histological examination of which revealed typical sarcoid tissue. A Kveim test was made in March, 1950; two months later an area of reddening and induration was seen at the site of the injection, and the biopsy of this area of skin showed sarcoidosis. The total protein and globulin were increased. Another test with purified protein derivative, second strength, was made in March, 1950; after 24 hours, there was an area of reddening of 48 mm. diameter with a 6 by 6 mm. area of infiltration, both of which completely disappeared at 48 hours. In May, 1950, a test with purified protein derivative, intermediate strength, showed a 35 by 35 mm. area of erythema with a 5 by 5 mm. zone of induration in 24 hours that was not evident 24 hours later. The test was repeated in eight days with old tuberculin, 1:100, resulting in a 40 by 40 mm. area of reddening and a 6 by 6 mm. area of infiltration at 24 hours, and waning at 48 hours.

CASE 4.—A 44-year-old white man was known to have had tuberculosis since 1942 but it had been considered arrested since July, 1946. He was readmitted to the Veterans Administration Hospital in September, 1951. X-ray examination showed fibrocalcareous disease in the upper one-third of the right lung and in the midfield of the left lung and a 3 by 2 cm. tuberculoma-like density at the periphery of the subapical region of the right lung. This roentgenogram had shown no changes on comparison with serial films since 1945. Tests with purified protein derivatives in first and intermediate strengths were negative; a test with the second strength showed a 36 by 36 mm. area of erythema with a 4 by 4 mm. zone of induration in 24 hours, and residual minimal erythema and no induration at 48 hours. After a week the test was repeated with old tuberculin, 1:100, and the reaction was just like the one to purified protein derivative, second strength, except that the area of reddening was smaller (20 by 20 mm.). In October, 1951, an excised supraclavicular lymph node showed chronic inflammation with minimal fatty infiltration. All his sputum and gastric cultures were negative until August, 1952, when five positive sputum and gastric cultures were found. The tuberculin test was repeated with old tuberculin, 1:100, in August, 1952, and resulted in an 18 by 18 mm. area of erythema with a central zone of infiltration of 6 by 6 mm. diameter; the latter completely disappeared at 48 hours, whereas an 8 by 8 mm. zone of very faint erythema was still seen.

CASE 5.—A 44-year-old white man with a history of tuberculosis dating back to September, 1945, when a routine service film disclosed a small dense round lesion with a minute central highlight in the left apex and a small tuberculoma-like lesion in the left subapical region. He never had any clinical symptoms, and had short periods of hospitalization only, which terminated in irregular discharges; he had been working out of doors most of the time until his admission to the Veterans Administration Hospital in August, 1951. The disease had shown bilateral extension, and in 1948 extensive, predominantly fibrotic type of disease was seen in the upper halves of both lungs. In the same year a small left pleural effusion developed, followed in 1949 with a slight basal pleural effusion on the right. These subsided with aspiration and a two month course of streptomycin. Gradual regression of the bilateral disease process was seen until September, 1950, when bilateral extension was again noted. There had been no further changes in the pulmonary process until his latest admission in August, 1951, in spite of his continued heavy work as a truck driver. His sputum was negative on smear but positive on culture, and he was treated with pneumoperitoneum, streptomycin, and para-aminosalicylic acid. Tests with purified protein derivative, first and intermediate strengths, were negative; a test with the second strength showed a 30 by 30 mm. area of reddening with a 6 by 6 mm. zone of infiltration in 24 hours, which disappeared in another 24 hours. A test with old tuberculin, 1:100, which was done eight days later, gave a similar reaction with slightly smaller area of reddening. In August, 1951, biopsy of a right cervical lymph node showed changes compatible with a diagnosis of noncaseating tuberculosis or sarcoidosis. The reaction to purified protein derivative, second strength, in August, 1952, was a 42 by 42 mm. area of erythema and an 8 by 8 mm. area of induration at 24 hours that was waning at 48 hours; and the skin test with old tuberculin, 1:100, resulted in a 24 by 24 mm. area of reddening at 24 hours, leaving an area of 10 mm. of faint erythema without induration at 48 hours.

CASE 6.—A white man was admitted to the Veterans Administration Hospital in May, 1951. The pulmonary process in this 61-year-old veteran was discovered on routine x-ray examination in another Veterans Administration Hospital where he was treated for erysipelas. X-ray examination showed predominantly fibrotic and confluent type of density in the upper one-third of both lungs. Definite cavitation could not be made out on planigrams. Reactions to purified protein derivative, first, intermediate, and second strengths, were negative. A very large number of sputum smears, 10 sputum cultures, three gastric cultures, a guinea pig inoculation, and cultures of bronchial secretions were negative. Biopsy of a right supraclavicular lymph node in August, 1951, revealed granulamatous inflammation without caseation. The Kveim test showed no reddening or induration after six months. In March, 1952, when he was supposed to be transferred to a domiciliary center, one positive culture was reported. The colonies grown in this medium were inoculated into a guinea pig for further identification, with positive results. In March, 1952, a test with old tuberculin, 1:100, in 24 hours showed a 40 by 40 mm. area of marked reddening with an 8 by 8 mm. central area of slight induration, none of which was evident at 48 hours. Twelve days later, a similar reaction resulted with purified protein derivative, second strength, although the area of erythema was larger (64 by 64 mm.). There were no radiographic changes, and sputum and gastric cultures were again negative thereafter. In July, 1952, there was a weak but still typical reaction to purified protein derivative, intermediate strength, showing a 5 mm. area of slight induration and a 12 mm. area of erythema at 48 hours.

COMMENT

Atypical tuberculin reactions were encountered in six cases of active tuberculosis, representing the following types of disease: (1) primary tuberculosis, (2) tuberculous pleurisy with effusion, (3) pulmonary tuberculosis coexisting with sarcoidosis, or rather "sarcoid stage of tuberculosis," and (4) chronic fibrotic type of disease with torpid clinical course. The reason for this particular type of reaction in the above cases cannot be definitely determined. It is not likely that it has anything to do with

general reactive ability of the skin,[1] as in four of these six cases entirely typical positive reactions were seen either prior or subsequent to this type of atypical test. Therefore, the McClure-Aldrich test or testing with nonspecific irritants, such as codeine, were not done. Anticutin tests, which were performed in three cases (table),

Results of Anticutin Tests in One Subject with Serum of Tuberculous Patients with Atypical Tuberculin Reactions

First Test

	Reading, Hr. After Injection			
Test Material*	24	48	72	96
PPD + NaCl solution	1+	2+	2+	2+
PPD + serum, case 4	0	1+	2+	1+
PPD + serum, case 5	0	1+	0	0
Second Test				
PPD + NaCl solution	1+	2+	2+	2+
PPD + serum, case 6	0	Minimal erythema	0	0
PPD + serum, R. B. W.†	0	2+	2+	2+

* In every instance 0.05 cc. of purified protein derivative, first strength, was used in addition to 0.05 cc. of the serum or isotonic sodium chloride solution.

† This patient had bilateral pleural effusion, but his tuberculin tests were consistently negative during a four months' period of hospitalization and tubercle bacilli were never isolated from his pleural fluid or gastric contents.

seem to indicate the presence of a "tuberculin-neutralizing factor" in the serum of two of these patients; however, the reliability of the anticutin tests is questionable.[2] It is also realized that most of these tests would be considered negative by some physicians, especially Europeans, even if the time element had been normal, i. e., the area of infiltration had been evident at 48 hours, because of the small size of the area of infiltration; therefore, they would classify these cases under the heading of "tuberculin-negative active tuberculosis."[3] Be that as it may, the fact remains that this type of reaction—although rare—does occur in active cases of tuberculosis, and in the differential diagnosis of pulmonary lesions of undetermined nature it may be of practical significance to keep in mind that this type of response to tuberculin is not always a false positive reaction.

SUMMARY

In six cases of active tuberculosis atypical tuberculin reactions were noted, consisting of the appearance of a large area of marked erythema and a small area of infiltration at 24 hours, and their complete waning at 48 hours, usually following a large dose of intracutaneously administered tuberculin. These, as a rule, are false positive reactions, but may rarely occur during certain phases of active tuberculosis, and therefore if this type of reaction is encountered in a case of pulmonary lesion of undetermined nature, it should not be interpreted as definite evidence against the diagnosis of active pulmonary tuberculosis.

333 S. Third.

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RELIEF OF HYPERTENSIVE HEADACHE BY INTRAVENOUS INJECTION OF THIOCYANATE

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and
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Headache is the commonest and often the only symptom of hypertensive disease. It occurs in about 50% of patients. The distress it causes is sometimes unbearable, and the common analgesics are frequently ineffective in its relief.

Thiocyanate has long been used in the symptomatic treatment of hypertension. Because of its severe toxic effects at high serum concentration, however, periodically it lapsed into disuse until Barker [1] introduced as a safeguard the technique of routine measurement of serum thiocyanate concentration. He noted relief of headache in 76% of his patients; similar incidences (from 50 to 88%) of relief have been observed by others (Kurtz, Shapiro and Mills,[2] Fanson, Kinsey and Palmer,[3] Blumenthal and Wetherby,[4] Watkinson and Evans,[5] Alstad,[6] Fischman and Fischmann,[7] Aas and Thingstad,[8] and Thomas [9]). Hypertensive headache is now recognized (Page and Corcoran [10]) as the major indication for treatment with thiocyanate.

Treatment ordinarily consists in oral administration of the drug in doses slowly adjusted to yield serum concentrations of from 6 to 12 mg. per 100 cc. (Barker [1]); concentrations of from 3 to 6 mg. per 100 cc. often suffice for the relief of headache (Page, Corcoran and Taylor [10b] and Alstad [6]). Variations possibly in absorption and certainly in excretion of the ion and risks of toxic accumulation account for the delay of several days that usually elapse before relief is obtained. The purpose of this report is to describe the use of intravenous injection of thiocyanate in a dose that is intrinsically nontoxic but that gives rapid and prolonged relief of hypertensive headache.

From the Frank E. Bunts Educational Institute and the Research Division of the Cleveland Clinic Foundation.

The thiocyanate ampuls were supplied by Dr. K. G. Kohlstaedt, Lilly Laboratory for Medical Research, General Hospital, Indianapolis.

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PROCEDURE

Seventeen injections of thiocyanate were given to 15 hypertensive patients complaining of headache. The drug was given during the period of observation and study customary before a patient in the ward of the research division is treated with more definitive antipressor drugs and regimens.

The diagnoses in the patient group were as follows: malignant phase of essential hypertension, seven; severe essential hypertension, six; early essential hypertension, one; and renal hypertension (chronic glomerulonephritis), one. The diagnosis of hypertensive headache was based on the patient's description of his sensations. The common form (vascular) was a dull, throbbing pain, diffuse or localized, usually matutinal but often more or less constant. The less common form (muscular) was coexistent with or sequential to the former and was described as painful stiffness of the neck, attributed to sustained contraction of the cervical muscles.[11]

Patients were not given thiocyanate during active hypertensive encephalopathy. The headache was severe in all and was of some months' duration in most of the patients. Treatment had been attempted by various drugs and procedures. Thiocyanate was given only after ineffectual trials of some or most of the following measures: use of the "head-up" bed, ergotamine tartrate, ergotamine and caffeine (Cafergot), acetylsalicylic acid, aminopyrine, phenacetin, acetylsalicylic acid and caffeine, mephenesin (Tolserol), and in a few instances, dihydromorphinone (Dilaudid) or codeine parenterally. Thiocyanate was given by intravenous injection of 20 ml. of a solution containing 1.396 gm. of sodium thiocyanate, which represents 1 gm. of the thiocyanate ion. Since the thiocyanate ion distributes in about 25% of body weight, this dose should yield concentrations of about 6 to 7 mg. per 100 cc. of serum in an adult weighing 60 kg. Such concentrations are considerably less than those (above 15 mg. per 100 cc.) that are potentially toxic.[1] Consequently, measurements of serum thiocyanate concentration were not done routinely in these patients.

The two criteria used in evaluating response were (*a*) the patient's estimate of relief as expressed to the physician and (*b*) a check on this from the nurses' notes to determine whether and in what amount the patient had asked for analgesics available to him as necessary. Relief was graded as follows: 4+ represented complete relief; 3+, complete relief when supplemented with acetylsalicylic acid or aminopyrine (0.3 to 0.6 gm. daily); 2+, headache much improved, but requiring supplements of acetylsalicylic acid, aminopyrine, or ergotamine and caffeine as much as four times a day; 1+, slight relief; and 0, no change. The duration of relief was estimated for a minimum of 10 days.

Results of Treatment of Hypertensive Headache with Thiocyanate Intravenously

Case No.	Type of Hypertension	Characteristics of Headache*				Degree of Relief†	Duration, Days	Serum, SCN Mg./100 Ml.
		Time of Occurrence		Type				
		Constantly	A. M.	Vascular	Muscular			
1	Malignant essential	.....	X	X	X	++++	>10	...
2	Severe essential	.....	X	..	X	++++	>10	...
3	Malignant essential	Almost	..	X	X	++++	>10	...
4	Malignant essential	Almost	..	..	X	++++	>10	...
5	Severe essential	.....	X	X	X	++++	>10	...
6	Malignant essential	Almost	..	X	X	++++	>10	...
						+++	7	...
7	Severe essential	.....	X	X	X	+++	5	6.5
8	Severe essential	Definitely	..	X	X	+++	>10	...
9	Malignant essential	.....	X	X	X	+++	>10	7.3
10	Malignant essential	Almost	X	X	X	+++	7	5.9
						+++	6	8.0
11	Malignant essential	.....	X	X	X	+++	>10	5.7
12	Renal	Definitely	..	X	X	++	..	...
13	Severe essential	.....	X	X	X	++	>10	...
14	Severe essential	Almost	..	X	X	+	..	...
15	Early essential	Definitely	X	..	X	0	..	...

* Headache had been present for several months except in case 12, in which it had been present for eight days.
† ++++ = complete relief. +++ = complete when supplemented with acetylsalicylic acid or aminopyrine. ++ = much improved, but requiring acetylsalicylic acid, aminopyrine, or ergotamine tartrate and caffeine. + = slight relief. 0 = no change.

RESULTS

The character of the headache experienced and the degrees and durations of relief are summarized in the table. In brief, seven patients were promptly and completely relieved of headache for more than 10 days. A second injection in one of these patients gave 3+ relief for seven days. Responses of grade 3+ for intervals of 5 to more than 10 days were observed in five patients, including one in whom the dose was repeated. Thus, 11 of the 15 patients were substantially relieved; these include the seven patients with malignant and four of the six with severe essential hypertension. The estimate of relief was only 2+ in two patients. One had renal hypertension and was recovering from what seemed to have been a crisis of hypertensive encephalopathy sustained a few days before. The other was a patient with severe essential hypertension complicated by a mental depression. The one patient whose relief was graded as 1+ was in the recovery

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phase of hypertensive encephalopathy. The only patient who showed no evidence of relief suffered from early essential hypertension, and her headache seemed to be of the "tension" rather than the hypertensive type.

Relief was manifest a few hours after the injection was given; when the drug was given in latter part of the morning, improvement was noted at the time of the afternoon ward round. The blood pressures of these patients were measured twice daily under uniform conditions. Comparison of the weekly averages of pressure before and after thiocyanate injection showed no decrease attributable to the drug.

The injection was painless, and there was no local reaction. No signs or symptoms of toxicity occurred during the period of observation, which often extended for several weeks. The patients who obtained relief were gratified by the selection of this mode of treatment.

COMMENT

The incidence (11 of 15 patients) and degree (3+ to 4+) of relief of hypertensive headache obtained by intravenous injection of thiocyanate are the same or better than are observed when thiocyanate is administered orally. The rapid onset of relief is especially gratifying in patients whose headaches have been persistent and disabling. Intravenous administration of a known dose of thiocyanate permits complete control over the serum thiocyanate concentration and obviates the variables of absorption and excretion of the ion that make oral dosage a matter of individual trial and error. The levels of serum thiocyanate reached in an adult weighing 60 kg. by a dose of 1 gm. of thiocyanate ion are at the lower range of Barker's suggested therapeutic concentrations (6 to 12 mg. per 100 cc.[1]) and the upper range of those suggested by Page, Corcoran and Taylor [10] and by Alstad [6] for the relief of headache. This level is not intrinsically toxic, although the possibilities of allergic reactions in patients who had previously been treated and sensitized to thiocyanate have not been excluded.

The mechanism of relief is obscure. Just as there is no direct relationship between the height of the blood pressure and the occurrence of headaches,[11] so in this group relief by thiocyanate was not associated with decreased arterial pressure.

Among the various properties attributed to thiocyanate ion, some, such as relaxation of smooth muscle, thyroidal blockade, decreased adrenal cortical glomerulosal function, and increase of urinary sodium excretion, do not seem to account for the rapid relief of headache at the low concentrations of the ion obtained after intravenous injections of 1 gm. Rather, relief is probably associated with the sedative properties of the drugs and its juxtaposition to the bromide ion in the Hosmeister series.

Many investigators have been impressed by the similarities of hypertensive headache and migraine; thiocyanate has been used orally for interval treatment of migraine. The present experience suggests that intravenous injection of thiocyanate might be tested as a means of relief of impending migraine.

The patients whose serum concentrations were measured from one to three days after injection showed values approximately equal to those that must have obtained shortly after injection (table). Excretion of the ion was apparently slow. Since the urinary output of the thiocyanate ion is directly proportional to urinary chloride, this can be attributed in part to the fact that most of these patients were on diets low in sodium and chloride. This slow excretion is a constant hazard of oral treatment with the thiocyanate ion; it is an obvious contraindication to the frequent repetition of intravenous injections of the thiocyanate ion without appropriate serum analyses. Lastly, the fact that intravenous injection yields predictable serum concentrations suggests that this may be a useful routine in the initiation of oral treatment with thiocyanate.

SUMMARY AND CONCLUSIONS

Seventeen intravenous injections of a solution containing 1 gm. of thiocyanate ion were given to 15 hypertensive patients because of headaches that were refractory to other methods of treatment. Gratifying and rapid relief was experienced by three-quarters of the group. The incidence and degree of relief approximated those observed during oral treatment with thiocyanate, but the onset of relief occurred within hours rather than days. The dose used yields predictable serum concentrations (6 to 7 mg. per 100 ml. in an adult weighing 60 kg.), so that chemical determinations after single or widely spaced injections are unnecessary. These concentrations are much less than those considered toxic; correspondingly no toxic reactions were observed in this series. Repeated injections demand chemical control of serum concentration. The mechanism of relief is obscure; it does not depend on decreased arterial pressure, and it is probably related to the sedative action of the ion. This experience leads to the suggestions that intravenous injection of thiocyanate be tested in impending migraine and in the initiation of oral treatment of hypertension with thiocyanate.

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Drugs Affecting Skeletal Muscle.—Acetylcholine has been recognized as the chemical transmitter at the neuromuscular junction and at ganglia in the sympathetic nervous system, and it probably has the same function as the transmitter in the central nervous system. It is the consensus that neostigmine acts as an anticholinesterase agent to prolong the action of acetylcholine at the neuromuscular junction and at synapses. Like most quaternary salts, it cannot penetrate the central nervous system. Neostigmine acts as an anticurare agent by building up the concentration of acetylcholine until the threshold for stimulation is reached. Tensilon, a simple analog of neostigmine, is more specific as an anticurare agent than neostigmine and is believed to act like acetylcholine itself in displacing curare from the site of action and stimulating the muscle directly, but considerable evidence is accumulating that it may act partially as an anticholinesterase agent.

Numerous synthetic curarimimetic agents are now known, and some have found clinical usefulness. These synthetics have been classified into two divisions, the tubocurarine-like compounds and the decamethonium-like compounds. The tubocurarine class acts by competing with acetylcholine for receptors at the neuromuscular junction and the action is antagonized by neostigmine or Tensilon. The decamethonium class acts by depolarizing the muscle membrane just as acetylcholine itself does and, consequently, the action is not antagonized by neostigmine or Tensilon. Intermediate classes having some of the properties of both of the above classes are becoming available and even decamethonium itself may have a complex mode of action instead of being purely depolarizing.—L. O. Randall, Ph.D., and L. M. Jampolsky, Ph.D., Special Review, Pharmacology of Drugs Affecting Skeletal Muscle, *American Journal of Physical Medicine*, April, 1953.

REVIEW AND EVALUATION OF QUINIDINE THERAPY FOR AURICULAR FIBRILLATION

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Any therapeutic agent that has been the subject of as much controversy as has quinidine deserves frequent reevaluation. That its use is controversial is not surprising, since it is a relatively new drug compared with, for example, digitalis. Despite the fact that digitalis has been used in cardiac conditions for more than 165 years, there still is not complete agreement as to its use and method of application.

From today's vantage point, one can say that quinidine fell into disrepute after its introduction in the treatment of heart disease by Frey,[1] in 1918, because of limited knowledge of its pharmacological properties and lack of individualized application—two factors that are still operative in the abuse of the drug. In that early period of disfavor, the use of quinidine in cardiac conditions was considered so perilous that one clinician advised that any physician who contemplated administering the drug should warn his patient of the attendant risks, just as he would if the patient were a candidate for a hazardous surgical procedure.

In the early 1920's, the work of Lewis and his associates [2] helped to clarify the pharmacological action of quinidine sulfate. With electrocardiographic tracings, they recorded the effect on the cardiac auricular rate of various-sized single and divided doses. The maximum cardiac effect was reached in about two hours after administration of the drug, and the size of the dose determined the intensity of the action (fig. 1). Most of the effect had worn off by the end of four hours. It was demonstrated that the effect was cumulative when quinidine was given in repeated doses and that dosage must be adapted to individual patient needs.

Further clinical and experimental reports [3] tended to dispel the impression that embolism occurred more frequently with quinidine than with other types of cardiac medication. Certainly embolism occurred in cases of auricular fibrillation treated with digitalis only, or even when no treatment had been given. It would seem that untoward incidents during treatment with quinidine achieved greater prominence in the literature because of the unestablished status of the drug.

AMBULATORY TREATMENT

In the late 1920's, at the outpatient clinic of the University of Minnesota, I was confronted with a cardiac disease problem that could not be handled solely with digitalis therapy. A 72-year-old farmer had been reporting to the clinic for more than two months. His chief complaints were marked dyspnea, weakness, and swelling of the ankles and legs. Digitalis had been administered, and the heart beat rate was 70, but the beat was irregular. Congestion rales were present in both lung bases. The liver was palpable below the costal margin, and there was pitting edema in the legs and the feet. The patient said that his heart had been "thumping irregularly" for about four years. Although he felt there had been some improvement since he began receiving treatment at the clinic, his activities were very much limited. He was advised to go into the hospital for further observation and possibly a course of quinidine therapy. He refused hospitalization, because he was needed at home to care for his invalid wife.

A most serious question was then considered: Did one dare give quinidine to an ambulatory patient? Since a fibrillating heart was shown to be 15% to 75% less efficient than a regularly beating heart, and since there were indications that the dangers of quinidine therapy had been overemphasized, it was decided that ambulatory treatment warranted trial. Treatment was begun with only 1½ grains (0.09 gm.), half the usual test dose. A maintenance dose of digitalis was given during the quinidine sulfate therapy. In one week, after the daily dose of quinidine had been increased to 1.17 gm., normal rhythm was established. The edema, dyspnea, and signs of cardiac failure had disappeared. The patient felt better than he had in the previous four years. His pulse rate continued to be regular, and he was able to carry on his farm work for at least the three ensuing years of which the clinic had record.

The successful results in this case suggested further trial on an ambulatory basis in a group of patients. The initial series consisted of 28 unselected patients with auricular fibrillation, but 4 of these failed to continue treatment. First, digitalis was administered, so that the pulse was slowed down to a rate of 70 to 80. During therapy with maintenance doses of digitalis, oral treatment with quinidine sulfate was started: one dose of 1½ grains on the first day, two doses on the second day (one at 8 and one at 9 a. m.), and three doses on the third day, with gradual increases until a total of 30 grains (1.94 gm.) per day was being given. In this series the drug was administered at one hour intervals. Treatment has since been changed; the initial dose is 3 grains (0.19 gm.) and doses are given at two hour intervals: one dose the first day, two doses the second, three doses the third, and four doses the fourth. On the fifth day the dose is raised to 5 grains (0.32 gm.) and three doses are given, on the sixth four doses, and on the seventh three doses. The fourth dose on the seventh day and the three doses on the eighth day consist of 10 grains (0.65 gm.).

Arteriosclerotic and hypertensive hearts responded more readily, and usually to smaller doses, than did rheumatic hearts. Among the 24 patients who continued

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1. Frey, W.: Ueber Vorhofflimmern beim Menschen und seine Beseitigung durch Chinidin, Berl. klin. Wchnschr. **55**: 450, 1918.

2. Lewis, T., and others: Observations upon the Action of Certain Drugs upon Fibrillation of the Auricles, Heart **9**: 207, 1921-1922.

3. Levy, R. L.: Clinical Studies of Quinidin: IV. The Clinical Toxicology of Quinidin, J. A. M. A. **79**: 1108 (Sept. 30) 1922. Viko, L. E.; Marvin, H. M., and White, P. D.: A Clinical Report on the Use of Quinidin Sulphate, Arch. Int. Med. **31**: 345 (March) 1923. Korns, H. M.: An Experimental and Clinical Study of Quinidin Sulphate: Clinical, ibid. **31**: 36 (Jan.) 1923.

treatment, normal rhythm was reestablished in 17, or 70%.

STUDIES OF EXCRETION AND CONCENTRATION OF QUINIDINE

Later, in consultation on hospitalized patients (University of Minnesota Hospital) who were manifesting fibrillation, I noted variations in time interval between the last dose administered and restoration of normal sinus rhythm. Often normal rhythm was not restored for many hours after the last dose had been given. This indicated a need for quantitative study of the concentration and excretion of the drug. Such a study was made in 1939 and 1940, on animals and on human subjects. With the method used, a description of which was published in the *American Heart Journal* in 1940,[4] amounts as small as 0.005 mg. could be detected. After intravenous injections of quinidine in dogs, less than 6% of the drug was present in the blood at the end of seven minutes, which closely approximated the results of previous investigators.[5] Weiss and Hatcher, in experiments on cats in 1927,[5a] found about 5% of the drug in the blood five minutes after intravenous injection. Also, Hatcher and Gold,[5b] after

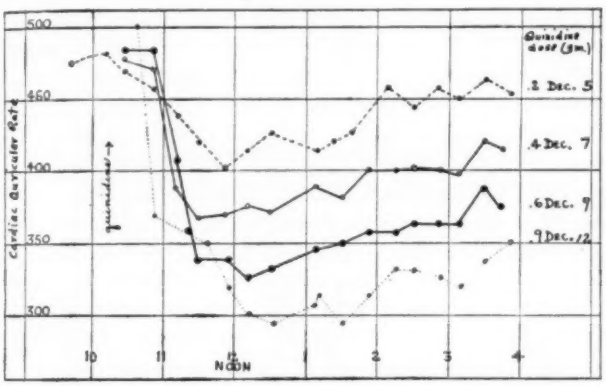


Fig. 1.—Comparison of the effects of separate and increasing single doses of quinidine base on the rate of the auricles (Lewis and associates [2]) (reproduced from the *American Heart Journal*, July, 1940).

intravenous injection of quinine, an isomer of quinidine, in three patients, found only a trace of the drug still present in samples of blood taken 6 to 20 minutes after injection. In my studies in humans, after a single oral dose of 5 to 10 grains (0.32 to 0.65 gm.) less than 10% of the drug was found in the blood at the end of 30 minutes, with no trace of the drug at the end of one hour. Patients given multiple doses of quinidine, totaling 10 to 30 grains, showed about 20% of the administered amount in the blood one-half hour after the last dose and a maximum of about 40% at the end of one hour. The blood showed no trace of quinidine at the end of 90 minutes.

Studies of the heart muscle, liver, lungs, spleen, kidneys, diaphragm, and gastrocnemius muscle in dogs were then made, to determine the rate of absorption and excretion after oral administration. I also wanted to determine, in these studies, whether there was any difference in rate and amount of absorption and excretion of the drug between very active muscle, such as the heart, and less active muscle, such as the diaphragm and the gastrocnemius muscle. In the heart, after the administration of a single small dose of 100 mg., the maximum concentration was reached in about 30 minutes. No trace of the drug was found at the end of four hours. After the injection of a single large dose of 585 mg., the maximum concentration was reached in approximately one hour. The drug did not disappear entirely from the heart until about seven hours after the injection. When the drug was given in divided doses, the maximum concentration occurred at the end of two hours, but there was still an appreciable amount of quinidine present at the end of eight hours. When 600 mg. of quinidine sulfate was given in three equally divided doses at one hour intervals, maximum concentration was reached in approximately two hours after the last dose; however, this maximum was only about 50% of the amount found one hour after the injection of 585 mg. in a single dose (fig. 2).

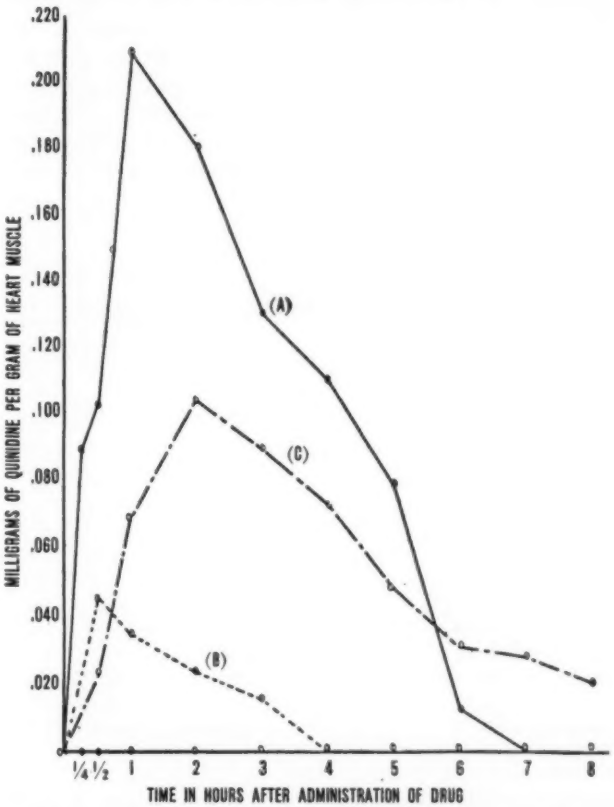


Fig. 2.—Diagram showing the length of time quinidine remains in the heart muscle of dogs. *A*, after oral administration of 585 mg. in a single dose, *B*, after oral administration of 100 mg. in a single dose, and *C*, after oral administration of 600 mg. in three equally divided doses.

The maximum concentration was more than twice as much in the heart (0.105 mg. of quinidine per gram of tissue) as in the diaphragm (0.039 mg.) and twice as much in the diaphragm as in the gastrocnemius muscle (0.018 mg.). In general, observations in this study parallel those of Lewis: the maximum electrocardiographic effect was obtained within two hours (fig. 1). Clinically, the following observations were made: 1. There were individual variations in the amount of quinidine necessary in any patient for restoration of a fibrillat-

4. Weisman, S. A.: Studies on the Time Required for the Elimination of Quinidine from the Heart and Other Organs, Am. Heart J. **20**: 21 (July) 1940.

5. (*a*) Hatcher, R. A., and Weiss, S.: Studies on Quinidine, J. Pharmacol. & Exper. Therap. **30**: 335 (Feb.) 1927. (*b*) Hatcher, R. A., and Gold, H.: Studies on Quinin, ibid. **30**: 347 (Feb.) 1927.

ing heart to one with a normal sinus rhythm. This amount could not be predicted, so that dosage schedules could not be predetermined with any degree of certainty. 2. Each patient had his own threshold for the amount of quinidine he could tolerate without experiencing toxic symptoms. 3. In many patients, normal sinus rhythm returned many hours after maximum levels of the drug had been reached in the blood and in the heart.

QUESTIONABLE APPROACHES TO TREATMENT

The studies mentioned, in addition to other published works, would indicate that the level of quinidine in the blood is no yardstick for treatment. Normal sinus rhythm may occur many hours after the peak quinidine blood level is reached. Yet, since Brodie and Udenfriend [6] introduced the fluorometric method for measuring quinidine plasma concentrations, reports have appeared to the effect that definite blood levels of quinidine must be attained for the irregular heart rhythm to be restored to normal sinus rhythm, and that doses ordinarily used are far too inadequate to attain these blood levels. Such an approach would appear to be most dangerous. Quinidine, it must be remembered, is a highly potent drug. It is a cardiac depressant; it depresses the sinoauricular node, the pacemaker of the heart. It increases the P-R, QRS, and Q-T conduction time. If quinidine is administered in toxic doses, asystole may result. Overdosage has resulted in paralysis of the respiratory center, with sudden death. Many otherwise unexplained deaths occurring during quinidine therapy, particularly with overdosage, may well have been due to asystole or respiratory paralysis. Animal experiments demonstrate how rapidly the respiratory center and blood pressure are affected, particularly when quinidine is given intravenously (fig. 3). A drug that is capable of such action must be used with great care and respect.

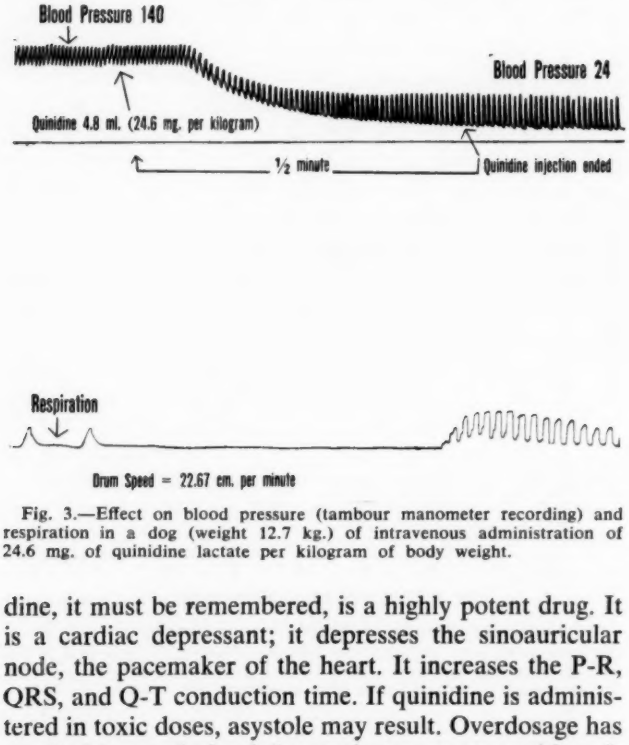


Fig. 3.—Effect on blood pressure (tambour manometer recording) and respiration in a dog (weight 12.7 kg.) of intravenous administration of 24.6 mg. of quinidine lactate per kilogram of body weight.

Except as an immediate lifesaving measure, it is not imperative to restore a fibrillating heart to normal sinus rhythm within a period of hours or even a day or two. Sound clinical judgment dictates gradual increase of dosage over a period of several days to minimize the possibilities of toxic symptoms. I rarely give more than 30 grains (1.94 gm.) of quinidine a day. If more than that is required for reestablishment of normal sinus rhythm, it usually is difficult or impossible to maintain normal rhythm for any length of time, and fibrillation will recur.

According to Prinzmetal, when the ectopic arrhythmic focus (irritable center) is stronger than the sinoauricular node, quinidine fails to restore normal rhythm. If quinidine therapy is continued to the point where the sinoauricular node is affected, asystole may result. Lewis also warned against overdosage, stating that, when the effect of quinidine on the conductive rate of the "circus movement" is greater than it is on the refractory time, then fibrillation persists.

Interestingly enough, practically all the reports relating quinidine blood levels to cardiac effect state that a good number of patients achieve normal rhythm with very small oral doses of quinidine, and that it is perhaps better to initiate treatment with small doses to avoid toxic symptoms. As an example, Sokolow and Edgar,[7] despite their emphasis on the attainment of certain blood levels, made the following cautious statement: "Since approximately 15 per cent of our patients had normal rhythm restored at blood levels of 4 mg. per liter or less, and since this blood level rarely is attended by any toxicity, one may well wonder if small doses of quinidine might be tried in many cases in which a serious attempt at conversion is not warranted. One may be pleasantly surprised to gain successful results with small doses of quinidine."

In studies of this type, the variations in peak blood levels have been so great that it would be hazardous to use these levels to establish an average for clinical use. One cannot adhere to a predetermined schedule without courting trouble. In the cases of auricular fibrillation and flutter in which normal rhythm was restored, the highest peak blood level was more than five times as great as the lowest peak level (23.78 mg., Kalmansohn and Sampson [8]; 4.6 mg., Sokolow and Edgar [7]) in the rheumatic heart group; in the arteriosclerotic heart group, with or without hypertension, the highest peak blood level was almost five times as great as the lowest peak level (9.45 mg., Kalmansohn and Sampson; 2.0 mg., Sokolow and Edgar). Even more disturbing than the use of blood levels as a guide to dosage is the adoption by some workers of the intravenous route of administration in an enthusiastic effort to attain certain blood levels as quickly as possible. In one such series the mortality was almost 10% (4 deaths among 44 patients).[9]

COMMENT

On the basis of results of published studies, it must be acknowledged that the oral route, when feasible, is attended with the greatest safety factor. One should undertake the risks of intravenous administration only in very severe types of arrhythmias, such as ventricular fibrillation, and then only when death appears to be imminent

6. Brodie, B. B., and Udenfriend, S.: The Estimation of Quinine in Human Plasma with a Note on the Estimation of Quinidine, J. Pharmacol & Exper. Therap. **78**: 154 (June) 1943.

7. Sokolow, M., and Edgar, A. L.: Blood Quinidine Concentrations as a Guide in the Treatment of Cardiac Arrhythmias, Circulation **1**: 576 (April, pt. 1) 1950.

8. Kalmansohn, R. W., and Sampson, J. J.: Studies of Plasma Quinidine Content: II. Relation to Toxic Manifestations and Therapeutic Effect, Circulation **1**: 569 (April, pt. 1) 1950.

9. Acierno, L. J., and Gubner, R.: Utility and Limitations of Intravenous Quinidine in Arrhythmias, Am. Heart J. **41**: 733 (May) 1951.

unless emergency measures are adopted. Injection into a vein should be at a very slow rate. Rapid injection may cause convulsions, respiratory paralysis, or a profound fall in blood pressure. Intramuscular administration of quinidine is advantageous in some instances: in cases in which oral use results in gastrointestinal symptoms, for patients in coma, and as a prophylactic and therapeutic measure for cardiac arrhythmias during surgery and anesthesia.

A fibrillating heart is not a fully compensated one. Since quinidine is a myocardial depressant, it is dangerous to use it on a decompensated fibrillating heart without first administering digitalis to the patient, to ascertain that the myocardium is in the best possible physiological state before being subjected to such depressant action. Digitalis therapy should then be continued in maintenance dosage during quinidine therapy. The superimposition of the depressant action of a drug such as quinidine on an already embarrassed heart muscle may aggravate the existing condition and precipitate cardiac failure. In the treatment of auricular fibrillation, such

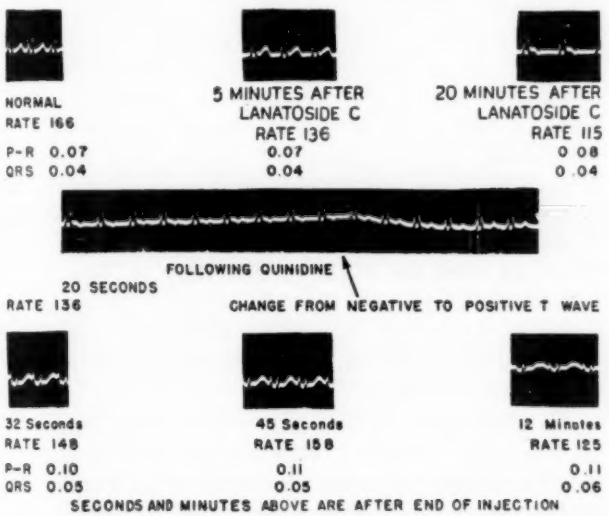


Fig. 4.—Electrocardiographic tracings of a cat, showing a negative T wave as a result of intravenous administration of a toxic dose of lanatoside C (0.30 mg. per kilogram of body weight) with a change to a positive T wave after administration of 20.0 mg. per kilogram of quinidine dihydrochloride.

failures and complications have usually been attributed to the action of quinidine rather than to the lack of previous digitalization.

Quinidine and digitalis are not synergistic in their action of the heart. This pharmacological action was brought out in a series of experiments on cats (fig. 4). The electrocardiographic tracings in figure 4 show the effect of a toxic dose of lanatoside C (Cedilanid) counteracted by a toxic dose of quinidine sulfate. The negative T wave resulting from the administration of the digitalis preparation is transformed into a positive T wave after the injection of quinidine. When sublethal doses of lanatoside C and quinidine were given together, the toxicity of the one drug tended to counteract the toxicity of the other.

SUMMARY

Primarily, it must be emphasized that quinidine is a highly potent drug and that its use is not without attendant risk. Experimental studies of the blood and various other organs have yielded valuable information on pharmacological action and absorption and excretion time of quinidine for clinical application. Since a particular dose may prove effective in one patient and ineffective or even toxic in another, and since there is as yet no reliable method of predicting the reaction, the safety of the patient demands that individual clinical response be the guide to dosage. The initial use of small doses at frequent intervals, with gradual increase in size and number of doses, constitutes the safest approach. It is inadvisable to give more than 30 grains (1.94 gm.) of quinidine a day to any patient. When larger doses are required for restoration of normal sinus rhythm, it is extremely difficult or impossible to maintain regularity for any length of time. Digitalization prior to treatment with quinidine sulfate and maintenance digitalis therapy thereafter are essential. Oral administration of quinidine is the method of choice. The intramuscular route is advantageous in cases in which oral administration is contraindicated. Intravenous administration of quinidine sulfate should be reserved for cases in which death is imminent and emergency measures are imperative. The use of blood levels of quinidine as an index of required dosage is dangerous, since intensity of cardiac effect cannot be exactly correlated with concentration of the drug in the blood. It is feared that quinidine may again fall into disrepute as a cardiac therapeutic measure should the laboratory be used as the guide for administration instead of the patient's clinical reaction.

6363 Wilshire Blvd.

Adenocarcinoma of Uterine Corpus.—An abnormal uterine discharge is the cardinal symptom of adenocarcinoma of the uterus. This symptom is of increasing significance each year after the age of 35, and is ominous in the postmenopausal individual. The common factor in this abnormal discharge is the destruction of the normal endometrium, with resulting ulceration, secondary infection, and the disruption of blood vessels. This may result in a mucopurulent leukorrhea-like, irritating uterine discharge, a serosanguinous discharge of frank bleeding of various degrees and patterns. The initial symptom of this malignant growth is abnormal bleeding in from 75 to 90% of the reported cases. In from 10 to 25% of instances, the initial symptom is a mucopurulent, leukorrhea-like discharge, and in approximately 5% of the cases the patients have been reported to be asymptomatic, with the result that the malignancy was an accidental finding at hysterectomy. In patients who are not postmenopausal, the bleeding associated with corpus carcinoma is characterized by the fact that it departs from the normal pattern. . . . In the postmenopausal period, the onset of the bleeding is frequently abrupt, and is variable as to amount and duration. Frequently the bleeding consists of irregular spotting and many months may elapse before the amount of bleeding alarms the patient sufficiently for her to seek medical advice. There is a difference of opinion as to what constitutes a postmenopausal patient. From the standpoint of early diagnosis of corpus carcinoma, it is well to consider any woman as having postmenopausal bleeding who is 40 years of age or over, who is not pregnant, and who has had amenorrhea for six months or more, and subsequently evidences cyclic or acyclic bleeding. Likewise those individuals who are still menstruating at the age of 52 should be regarded as having postmenopausal bleeding, and investigated accordingly. In adenocarcinoma of the corpus, pain occurs only in advanced stages of the disease, and hence it is only of value in indicating an unfavorable prognosis.—C. P. McCartney, M.D., Adenocarcinoma of the Uterine Corpus, *Surgical Clinics of North America*, February, 1953.

USE OF INTRA-AORTIC AND INTRACARDIAC TRANSFUSIONS IN CARDIAC ARREST

Hugh E. Stephenson Jr., M.D.
and
J. William Hinton, M.D., New York

When cardiac arrest or sudden shock occurs in the operating room, the problem of rapid transfusion of whole blood is often of paramount urgency. Much has been written about the efficacy of intra-arterial transfusions in selected cases. The intra-aortic and intracardiac routes, however, have not received adequate attention. It is the purpose of this report to consider these routes.

INTRA-AORTIC TRANSFUSION

A recent case illustrates the use of the intra-aortic transfusion route.

CASE 1.—The patient, a 36-year-old Negro man, was admitted with massive hematemesis and melana of several hours' duration. There was a history of proved duodenal ulcer that had been demonstrated rontgenographically and for which the patient had been under conservative therapy.

Despite repeated transfusions and insertion of a Sengstaken tube, bleeding continued, and a subtotal gastrectomy was thought advisable. At operation, 36 hours after the patient's admission, exploration of the abdomen revealed a large, penetrating, posterior ulcer of the duodenum as well as an anterior ulcer of the first portion of the duodenum. A subtotal gastrectomy was begun in which 70% of the stomach was removed. Because of the position of the common duct in relation to the adhesions about the ulcer, a common duct exploration was performed. An anterior Polya, short loop anastomosis was carried out. During the anastomosis, the patient's blood pressure dropped rapidly to zero, and the pulse was not palpable by the anesthetist. The surgeon could palpate a pulsation in the abdominal aorta. Intravenous needles in both arms had become dislodged. A vein in each arm was exposed and cannulated at once, but this was technically unsatisfactory. An attempt to enter an ankle vein was also unsuccessful. After a period of 35 minutes without demonstrable blood pressure or peripheral pulse, the aortic pulsation became perceptibly faster and weaker. Because of the danger of prolonged hypoxia from shock and the imminent possibility of death, it was felt that no further time could be consumed waiting for administration of blood via the extremities. At this point, the surgeon introduced a 15 gage needle into the abdominal aorta, just above its bifurcation at the pelvic brim, and 720 cc. of whole blood was rapidly introduced under pressure toward the heart while pressure was maintained on the distal aorta as illustrated. Within three minutes the blood pressure rose to 170/120 mm. Hg. The needle was removed from the aorta, and two fine cotton sutures were used to close the needle hole from which blood was rapidly escaping. A piece of gelatin sponge was placed over the sutured site as suggested by Jenkins and his co-workers.[1] The operation was completed uneventfully. Postoperatively, urine output was satisfactory, and the patient showed no signs of prolonged cerebral anoxia. Unfortunately, the patient died on the 24th postoperative day after a duodenal and pancreatic fistula had developed.

Although this case was not one of cardiac arrest but one of profound shock, it is believed that the intra-aortic route might oftener be applicable to cardiac arrest occurring in association with severe blood loss.

Advantages.—There would seem to be several advantages of the intra-aortic route for transfusion: 1. During abdominal or chest surgery, the aorta is the most accessible vessel in the body. 2. There would be no delay in starting the transfusion, as there would be in the case of a transfusion through the radial or other peripheral route requiring a cutdown and a short period of dissection. 3. By maintaining pressure on the aorta, the surgeon can tell at once when an adequate response is being achieved, and, thus, there is less danger of too rapid infusion of blood. 4. Before and during the transfusion, the surgeon can compress the aorta distal to the point of needle insertion and, thereby, increase blood flow to the cerebral, coronary, hepatic, and renal vessels. 5. No extra equipment is needed. 6. No additional help is needed other than an extra assistant to pump the blood. 7. The vessel need not be ligated as is often necessary after use of the radial artery. 8. The danger of ischemic necrosis of the member distal to the site of the arterial puncture is avoided. 9. No extra skin incision need be closed. 10. An extremely prompt response can be anticipated.

Disadvantages.—There are certain disadvantages to the intra-aortic route: 1. A retroperitoneal hemorrhage may result from improper placement of the needle. 2. If the needle is large enough for rapid transfusion, the needle puncture will generally require a suture for closure. Often gelatin sponge or oxidized cellulose may be needed. 3. A tear in the aortic wall might, under conceivable circumstances, occur and might be very difficult to repair. A severely arteriosclerotic aorta might tear beyond the point of puncture by either the needle or the closing suture.

Elevation of arterial pressure in the aorta contributes beneficially to the prevention of irreversible cerebral damage from anoxia. Blood pumped under pressure up the aorta toward the heart will fill the coronary arteries in a most satisfactory manner. In 1903, Velich [2] described a method of intra-arterial infusion suggested by Prof. A. Spina of Prague. Spina injected warmed isotonic sodium chloride solution into the external iliac artery. According to Velich, "Prof. Spina . . . injected 200 cc., directing the stream toward the heart. It forces the blood along before it, and when the semilunar valves are reached, the stream closes them. This closes the entrance into the left ventricle and drives the blood into the coronary arteries." Langendorff [3] and later Kuliabko [4] had apparently utilized similar methods in their experiments on resuscitation of the isolated heart.

Because of space limitations, the bibliographic references have been omitted from THE JOURNAL and will appear in the authors' reprints.

The Office of the Surgeon General of the United States Army gave permission to include the cases of patients treated in Army hospitals in our collection.

From the Department of Surgery, New York University Postgraduate Medical School, Fourth Surgical Division, Bellevue Hospital and University Hospital.

This investigation was supported in part by a research grant from the National Heart Institute, the National Institutes of Health, United States Public Health Service.

It remained for Kohlstaedt and Page [5] to experimentally compare the intra-arterial and the intravenous routes. They showed that, by the arterial route, blood pressure could be restored with little more than half the amount of blood that would be needed to achieve the same end via the intravenous route. Page [6] demonstrated conclusively, with methiodal sodium (Skiodan) injected into the femoral artery in dogs, that the renal, coronary, hepatic, and cerebral vessels fill rapidly.

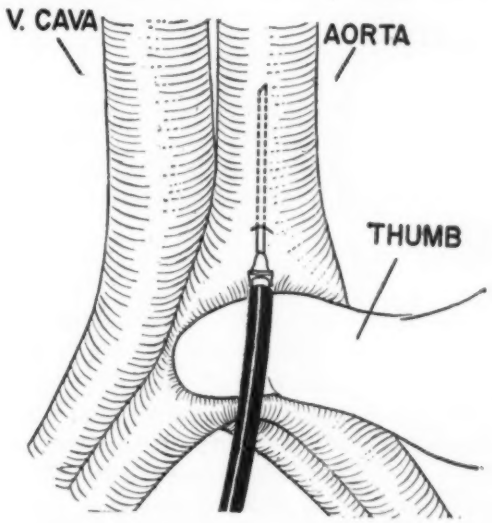
In 1908, Pike, Guthrie, and Stewart [7] demonstrated the beneficial effects of bandaging the limbs and the abdomen. They thought that the method was of doubtful value in cases in which there was no excessive bleeding. Woodward [8] recently reported the use of a similar technique in a case of cardiac arrest. Bandaging the limbs resulted in the heart filling and the temporary resumption of beat.

In several of our own cases of cardiac arrest, we have tried clamping the aorta by finger compression just beyond the point of origin of the great vessels in order to shunt more blood into the cerebral and coronary circulation. Schiff,[9] in 1874, first advocated "continuous pressure on the abdominal aorta so as to bring the blood in greater quantity toward the head," in cases of cardiac arrest. A number of other authors have since advocated this procedure. In dogs, we have alternated pressure on the unexposed abdominal aorta and manual massage of the heart and have been impressed by the additional filling of the heart that results. This type of massage was recently tried on one patient in cardiac arrest, and the observation was similar. The eventual outcome of this case was unsuccessful, however.

Others have called attention to the use of the intra-aortic route as a means of transfusion. In 1931, dos Santos and his co-workers [10] injected dye into the abdominal aorta for the purpose of roentgenologic visualization of the major arteries. Six years later,[11] the same author advocated the aortic route for the administration of blood and reported several cases in which it was performed successfully. Tuohy,[12] in 1938, suggested the intra-aortic route as an elective procedure in certain instances in infants and young children. He advocated a posterior approach introducing the needle through the skin to the left of the midline of a point anywhere from the 12th thoracic vertebra to the 2nd lumbar vertebra. A small caliber needle was used to prevent leakage after its removal. This route would, of course, be unsatisfactory in cases of cardiac arrest. Adequate massage of the heart could not be carried out through a posterior approach. Kay and Harker [13] reported a successful aortic transfusion of 500 cc. of blood through an 18 gage needle into the ascending aorta. The patient had been stabbed in the chest, the right mammary artery was severed, and severe hemorrhage resulted. Hanks and Papper,[14] in their report of 23 cases of cardiac resuscitation, describe the treatment of a patient in whom sudden and severe hemorrhage from a rent in the aorta followed a resection and anastomosis for coarctation of the aorta. Because of subsequent cardiac arrest, 6,000 cc. of whole blood was injected via a 15 gage needle into the aortic arch over a period of 45 minutes. Permanent resuscitation was achieved after a stormy postoperative period that was complicated by cerebral damage that cleared gradually.

From the Guthrie Clinic, Brehm [15] reported a patient who was given 1,000 cc. of blood through the aorta; the blood had been pressurized with oxygen for oxygenation. A marked and rapid improvement with resumption of spontaneous rhythm resulted. The thoracotomy was closed as was the abdominal incision, which had been made in order to explore the common bile duct. However, the patient died later in the day.

Seeley,[16] in mentioning the intra-aortic route as an acceptable method in cases of severe shock, described a patient to whom an intra-aortic transfusion was given for a massive hemorrhage resulting from a duodenal ulcer. Altogether, over 6,000 cc. of whole blood was given via the arterial route before an adequate blood pressure could be maintained. The patient later died from a lower nephron syndrome. White and Stubbs [17] described their technique of intra-arterial transfusion using the radial artery but felt that the femoral artery



After retracting the bowel and mesentery superiorly, a large gage needle is introduced toward the heart as shown, and blood is pumped in until there is an adequate pressure in the arterial tree. Pressure on the aorta distal to the needle assures an increased flow of blood into the renal, cerebral, and coronary vessels.

or aorta (abdomen open) would be equally effective. Petrovsky [18] used the common carotid for blood transfusion in four cases of cardiac arrest. Constantini and his associates [19] used an intracarotid transfusion in one patient, but directed the stream of blood toward the brain. Cardiac pulsations and respirations resumed, but the patient died 25 hours later without regaining consciousness.

INTRACARDIAC TRANSFUSION

In two cases of cardiac arrest, we resorted to the rapid administration of blood into the heart itself. In both cases the blood was given in the left ventricle.

CASE 2.—The patient, a 36-year-old white woman, was being anesthetized prior to a proposed thoracolumbar sympathectomy for hypertension, when asystole of the heart occurred. Thoracotomy was performed, and the heart was found to be arrested. The usual resuscitative measures were carried out, including rapid manual massage, administration of 100% oxygen through an endotracheal tube, 0.5 cc. of epinephrine in 1: 1,000 solution and 6 cc. of 1% procaine hydrochloride into the left ventricle,

and placing the patient in the Trendelenburg position. A nodal rhythm was resumed but was weak and failed to continue. Cardiac refill seemed markedly inadequate. With a 19 gage needle, 250 cc. of whole blood was pumped into the left ventricle. Massage was resumed, and a temporary improvement in tone of the myocardium was noted. Further attempts at resuscitation were unsuccessful.

CASE 3.—This patient was a 3-month-old infant in whom a Brock procedure for tetralogy of Fallot was being performed. Cardiac arrest followed excessive hemorrhage. A total of 400 cc. of whole blood was given rapidly into the left ventricle. Myocardial tone increased with weak contractions. Ventricular fibrillation, however, ensued after 2 cc. of barium chloride in a 2% solution was given intracardially. Attempts at defibrillation were unsuccessful.

In 1906, von den Velden first injected stimulants into the heart. The first report in which the cardiac route was utilized for the transfusion of whole blood appeared in 1925. In that year, Dunievitz and Bruckman [20] reported a successful transfusion via the cardiac route in a newborn infant in whom severe hemorrhage from the umbilical cord, vomiting of blood, and an extensive subcutaneous hemorrhage developed. With a 19 gage needle, 40 cc. of blood was introduced; one hour later, an additional transfusion of 85 cc. was given. Both injections were made through the chest wall at the fourth interspace and to the left of the sternum. Definite improvement in color, pulse, and respiration followed each transfusion, and the infant made a successful recovery, only to die from smallpox at the age of about five months.

Governale and Rink [21] encountered cardiac arrest (1939) in a 36-year-old woman who was being operated on for renal "apoplexy." Manual cardiac massage was instituted, but blood loss had been so great that successful resuscitation seemed unlikely without immediate and rapid transfusion. Attempts at transfusion through the saphenous veins and the venae comitantes of the brachial artery were unsuccessful. Through a Pitkin needle, 300 cc. of blood was then given in the left ventricle, and this was followed by administration of 500 cc. of isotonic sodium chloride solution. The heart began spontaneous rhythm, and the operation was completed. Death occurred 18 hours later from a second massive hemorrhage.

Iokhveds' article on intracardiac blood transfusion appeared in 1944.[22] In one case, he injected blood through a needle inserted in the right ventricle. In the second case, injection was made into the left ventricle. The latter procedure, combined with other measures, was successful. Bell,[23] in 1949 and 1950, used intracardiac transfusion in two cases of cardiac arrest. The first case was that of a 36-year-old white man admitted with a massive hemorrhage from a duodenal ulcer. Cardiac asystole developed shortly after the abdomen was entered. The left side of the chest was opened, and cardiac massage was begun, but the heart did not fill at all. At this point, blood was pumped into the right atrium through a needle. The heart did not respond, and further therapy was to no avail. Bell's second case was that of a 54-year-old man who was also operated on for a peptic ulcer that was bleeding severely. Nasal suction was carried out 24 hours after surgery, and respiration and pulse ceased suddenly. While an endotracheal tube was inserted, the chest was opened, and cardiac massage was instituted. After several minutes of massage, 1 cc. of epinephrine in 1: 1000 solution was injected into the myocardium. The heart beat became forceful enough for a peripheral pulse to be detected. Whole blood (500 cc.) was injected into the heart under pressure, but the heart beat ceased shortly thereafter, and massage was again started. Spontaneous nodal rhythm was initiated again for only a few minutes, and the patient died.

In cases of cardiac arrest in which direct massage of the heart is performed through the thorax, occasions that call for rapid transfusion will present themselves. Further studies are needed to evaluate the use of the intracardiac route for blood transfusion. Preliminary experimental work on dogs has already been carried out. In our hands, the intracardiac route has not proved to be of sufficient value, either in the human or in the dog, to warrant our advocating its further use at this time. In cases of cardiac arrest, transfusion via an intracardiac route requires that massage be interrupted; massage about the needle is inadequate and obviously traumatic. The trauma caused by the needle is often more than one would expect, since it is almost impossible to hold the needle at a fixed point in the myocardium. Injury to a coronary artery is possible if the needle is not inserted properly. Iokhveds, however, found at post mortem that a needle, present in the contracting heart for about 15 minutes, left only a minute puncture.

COMMENT

The prevention of air emboli is as important in intracardiac and intra-aortic transfusions as it is in other routes of intra-arterial blood transfusion. Wilkinson [24] recently described a simple device to prevent air emboli in such cases. Certainly one must be sure that all air is out of the distal tubing, and an air trap should be present between the bottle and the patient. Obviously, pumping must be discontinued before all blood has been transfused. Because of the sudden nature of cardiac arrest, breaks in aseptic technique are often unavoidable. When sterile techniques are not possible, antibiotic therapy should be instituted promptly.

During a four year period devoted to the study of the problems of cardiac arrest and resuscitation, one of us (H. E. S. Jr.) has carried on a survey by personal communication with various physicians in the United States, Canada, Australia, Great Britain, Ireland, France, and Puerto Rico. Through their kindness, we now have 1,200 reports of cases of cardiac arrest from which we have been able to make a number of observations and evaluations. Of the 1,200 reports, there were 19 patients who received intra-arterial blood transfusion during the period of cardiac arrest. Of these, the heart was resuscitated in 11, but permanent recovery was achieved by only 4 patients.

In the first 1,000 cases of cardiac arrest reported, we noted permanent survival in 250 patients, or 25%. The heart was resuscitated in 48% of the 1,000. In the literature, figures from individual reports and reviews

of small groups of cases vary from 8% to as high as 75%. Although only 25% of 1,000 attempts at resuscitation were successful, it seems likely that almost 250 persons are alive today because cardiac massage was attempted. Certainly a better percentage can be hoped for in the future. This should be especially true since there is an increasing awareness of the importance of the time factor. From 1,000 cases, it was noted that in 91% of the patients treated successfully massage of the heart was begun within four minutes. In only 9% was massage successful after a delay of over four minutes. In the 19 patients receiving an intra-arterial transfusion, massage was instituted in only 8 before four minutes had elapsed. Of these 75% were successfully resuscitated. Ten of the 19 patients had intra-arterial administration associated with marked blood loss prior to the arrest. Their ages varied from infancy to old age, and both sexes were almost equally represented. Ten were known to have had pathological cardiac changes of a severe nature prior to the arrest. Five patients had to be treated for ventricular fibrillation; in two, fibrillation was stopped by injection of procaine via the intracardiac route. Evaluation of the effect of the intra-arterial transfusion revealed that 11 patients were noted to have had a definitely favorable response varying from an improvement in the myocardial tone to a resumption of the normal cardiac pulsation. It seems almost certain that successful treatment in at least three of the four cases was a direct result of the intra-arterial administration of blood. A strongly suggestive history of a vago-vagal reflex immediately prior to arrest was noted in six patients. One arrest occurred at the time of tracheal extubation, one during intratracheal suction postoperatively, one during dilation of an esophageal stricture, one during traction of the gallbladder, and two during hilar dissection. This conforms with the previous work of Reid. He has repeatedly emphasized the importance of the vago-vagal reflex and its inhibition by the routine use of adequate amounts of atropine sulfate given shortly before induction.[25]

From a study of 1,000 case reports, it is obvious that many of these patients may have benefited from rapid administration of blood, for reasons stated above. We agree with McKensie and Morton [26] who concluded that cardiac arrest, profound nonhemorrhagic shock, and exsanguinating hemorrhage were the three major indications for intra-arterial transfusion. An increasing familiarity with the use of the intra-arterial transfusion may contribute to an increased number of permanent survivals.

On the Fourth Surgical Service at Bellevue Hospital the use of the intra-arterial transfusion has been part of the general program of preparedness that has been put into active use. An intra-arterial transfusion set is kept sterile and ready for use as an integral part of the mobile cardiac resuscitation unit, which was designed by one of us (H. E. S. Jr.). Such a unit is equipped with a positive-negative pressure pulmonary resuscitator (adjustable for infants), a direct writer electrocardiograph machine, sterile scalpels and instruments, syringes filled with various drugs, a rib spreader, interval time clocks, directions, a tracheal aspiration set-up, electrical defibrillator with varying currents and voltage, electrodes of various sizes, electrophrenic stimulator. This unit can be moved rapidly from one part of the hospital to another. This is important since 13% of 1,000 cases of cardiac arrest occurred outside the operating rooms, e. g., on the wards, in the elevators, emergency room, receiving room, dental and ear, nose, and throat examining rooms, bronchoscopy rooms, and in the x-ray department.

CONCLUSIONS

Our experience with the intra-arterial route for rapid transfusion is as encouraging as that of others. Intra-arterial transfusion seems indicated in certain selected cases of cardiac arrest in which asystole occurs after exsanguination or in which there is inadequate refill of the heart. Because of several of the advantages cited, we emphasize the efficacy of the intra-aortic route in those cases in which the surgeon has already opened the abdomen or chest and in which rapid blood transfusion is needed. The intracardiac transfusion route is discussed, including the clinical experience that has been encountered. To date the results of this procedure have not been especially encouraging. Regardless of whether or not the intra-arterial transfusion route is used in cases of cardiac arrest, we wish to stress again the importance of the time factor. From our survey and evaluation of 1,000 cases reported by physicians in various parts of the world, the need for promptness in cardiac massage becomes obvious.

477 First Ave. (16) (Dr. Hinton).

Urethral Stricture.—Differential diagnosis between urethral stricture and obstruction of the vesical neck not uncommonly presents a confusing problem to the physician. . . . It is quite unlikely that a patient in the age group susceptible to prostatism, who complains of symptoms of obstruction and restricted stream of not more than two to three years' duration, is suffering with a stricture. Inflammatory strictures generally occur during youth or early adult life and cause more or less constant symptoms, requiring periodic dilatation. A man who never has had difficulty or required the passage of sounds until the age of 45 to 50 years is not likely to be afflicted with stricture.

An erroneous diagnosis of urethral stricture is often made in such cases, as the result of inexperience in the passing of a sound. In the presence of prostatic hyperplasia it is often difficult, because of direction, to pass the sound beyond the apex of the prostate gland. This difficulty should not be interpreted as the presence of a urethral stricture. Temporary slight improvement in the urinary stream may follow this procedure, but usually it is not dramatic. . . .

A urethral stricture per se rarely causes residual urine, and if residual urine is present, obstruction of the vesical neck is almost certain to be present. If the patient's difficulty is on the basis of stricture, the passage of sounds will give definite and dramatic relief; if not, obstruction at the vesical neck should be suspected. A marked degree of enlargement of the prostate gland in a man who has suffered from a urethral stricture most of his adult life is rarely encountered. For some reason, a long-standing stricture seems to prevent advanced degrees of prostatic enlargement. For this reason, obstruction of the vesical neck should not be overlooked in these patients simply because digital rectal examination is not revealing. Urethrograms and cystourethrograms may also be helpful in differential diagnosis.—J. L. Emmett, M.D., and J. W. Faulkner, M.D., Clinical Problems in Prostatic Disease, *GP*, April, 1953.

TIETZE'S SYNDROME

CAUSE OF CHEST PAIN AND CHEST WALL SWELLING

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and
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Tietze's syndrome [1] is an entity manifested by painful nonsuppurative swelling of the costal cartilages. The second costal cartilage is most frequently involved. The disease has been reported in both sexes between the ages of 13 and 60 years. The majority of cases occurred in young adults. Chest pain at the involved site gradually develops until a firm, smooth, visible mass, protruding 0.5 to 3 cm. above the chest wall, becomes palpable. Tenderness directly over the involved costal cartilage is extreme at the onset but usually disappears within a few weeks, while the swelling often remains for months or even years. At the peak of the disease, the patient complains bitterly of local pain that is made worse by sneezing, coughing, or bending. The skin over the swelling is freely mobile and not inflamed. There is no regional lymphadenopathy. Respiratory infections frequently precede and accompany Tietze's syndrome.

Roentgenograms of the involved cartilages and adjacent bone are usually noncontributory. Blood cell counts, sedimentation rates, urinalyses, serology tests, and calcium and phosphorus determinations are normal. No definite pattern of pathological change could be recognized in the few instances in which biopsy of the lesion was performed.[2] The cause of the condition is obscure. Close survey of the anatomy of the involved region, however, suggested to us a previously unrecognized causative factor, which will be discussed below.

The disease is not rare, as shown by a number of publications since Tietze's original description in 1921.[1a] At least 77 cases of Tietze's syndrome have been reported since 1945. Since our search for reports failed to reveal any publications concerning this entity in the American literature, we were prompted to report our observations made during a recent study of two patients with Tietze's syndrome and, in addition, pulmonary Hodgkin's disease.

REPORT OF CASES

CASE 1.—Chills, fever, and pleuritic pain developed over the left side of the chest in a 23-year-old, white soldier, in April, 1951, while he was in Korea. These symptoms were soon followed by a severe dry cough, dyspnea, and marked weight loss. Roentgenograms initially revealed hilar adenopathy and pulmonary infiltrations of the right lower and left upper lung. A lymph node biopsy was noncontributory. On physical examination at U. S. Army Hospital, Camp Atterbury, Indiana, in July, 1951, the patient appeared chronically ill. There was slight dyspnea and orthopnea. Early clubbing of the fingers was noted. Rough breath sounds with occasional wheezes were heard over the left side of the chest anteriorly and over the right lower side of the chest posteriorly. Small posterior cervical and inguinal lymph nodes were noted. A right supraclavicular lymph node was palpable. The liver and spleen were not palpable. The chest was normal externally.

Laboratory studies showed hemoglobin 15 gm. per 100 cc. and the white blood cell count 14,500 with 92% neutrophils. Sedimentation rate, determined by the Wintrobe method, was 25 mm. per hour. Serum protein determinations, urinalyses, serologic tests, and sputum examinations for acid-fast bacteria were normal. Bone marrow biopsy revealed hyperplastic marrow with many megakaryocytes and a slight increase in the number of eosinophils. Bronchoscopic biopsy, at the point of external constriction of the right bronchus by a lymph node, revealed chronic bronchitis with eosinophilic infiltration. An initial lymph node biopsy demonstrated reticulum cell hyperplasia and an increased number of eosinophils and neutrophils; a later biopsy revealed classic findings of Hodgkin's disease. Roentgenograms continued to show hilar adenopathy and increasing infiltration of the left upper and right lower lung fields.

A few weeks after admission, the patient complained of severe pain over the upper left side of the chest. Examination revealed a smooth, visible, tender swelling of about 4 by 3 cm. at the left border of the sternum at the level of the second rib. The skin over the swelling was freely mobile and not inflamed. The swelling was firm but not hard and merged gradually with the surrounding tissue. The patient stated that coughing and movement in bed caused much pain in the involved area. Roentgenograms of the involved costal cartilage and adjacent ribs were normal. Biopsy was not performed. The pain was partially controlled by aspirin and codeine. Acute pain over the swelling lasted a few weeks, but mild, almost unnoticeable swelling at the second costochondral junction was still palpable after five months. Later the patient was treated with nitrogen mustard and triethylene melamine with only partial success. When this paper was being written the patient was still hospitalized, and there had been no evidence of bone involvement.

Typical symptoms of Tietze's syndrome developed in this patient while he was hospitalized for pulmonary Hodgkin's disease. Costochondral pain and most of the swelling disappeared spontaneously before specific treatment was started. Severe cough was a prominent feature of this patient's symptoms before the onset of Tietze's syndrome.

CASE 2.—During the summer of 1951, painful swelling of the right chest wall and pruritus of the lower extremities developed in this 31-year-old woman. In the fall of 1951, the patient noticed enlarged cervical lymph nodes, some orthopnea, and choking spells. She had no fever.

When admitted to Indiana University Medical Center in December, 1951, she appeared chronically ill and dyspneic. A nontender left axillary and a left supraclavicular lymph node, each about 3 by 3 cm., were palpated. The uterus was 4 cm. above the umbilicus, and fetal heart sounds were clearly audible. The liver and spleen were not enlarged. A macular rash was present over both legs. A well-demarcated swelling was noticed at the right third costochondral junction. The swelling

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Because of space limitations some of the bibliographic references have been omitted from THE JOURNAL and will appear in the authors' reprints.

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1. (*a*) Tietze, A.: Ueber eine eigenartige Haüfung von Fallen mit Dystrophie der Rippenknorpel, Berl. klin. Wchnschr. **58**: 829-831, 1921. (*b*) Gill, A. M.; Jones, R. A., and Pollak, L.: Tietze's Disease: Non-Suppurative Non-Specific Swelling of Rib Cartilage, Brit. M. J. **2**: 155-156, 1942. (*c*) Geddes, A. K.: Tietze's Syndrome, Canad. M. A. J. **53**: 571-573, 1945. (*d*) Leger, L., and Moinnereau, R.: Tuméfaction douloureuse de la jonction chondro-costale (syndrome de Tietze), Presse méd. **58**: 336-337, 1950. (*e*) Deane, E. H. W.: Costal Chondritis (Tietze's Disease), Lancet **1**: 883-884, 1951. (*f*) Bruin, C., and Smook, A. H.: Het Syndroom van Tietze, Nederl. tijdschr. v. geneesk. **95**: 2605-2608, 1951. (*g*) De Haas, W. H. D.: De Ziekte Van Tietze, ibid. **96**: 254-256, 1952. (*h*) Düben, W.: Das Tietzesyndrom und seine differentialdiagnostische Bedeutung, Deutsche med. Wchnschr. **77**: 872-875, 1952.

2. Footnotes 1*a*, *c*, *d*, *f*, and *g*.

was hard and extremely tender on palpation. The skin at the site of the swelling was not inflamed or edematous. Laboratory studies revealed red blood cell count 3,940,000, white blood cell count 13,750 with 92% neutrophils, and bilirubin, 1 minute, 0.3 mg. and, total, 1.6 mg. per 100 cc. Blood urea nitrogen and serologic tests, urinalysis, and prothrombin time and alkaline phosphatase determinations were normal. A bone marrow biopsy showed increase in megakaryocytes, eosinophils, plasma cells, and monocytes. A left supraclavicular lymph node biopsy indicated Hodgkin's disease with advanced fibrosis. Roentgenograms showed mediastinal widening and lobulated densities in the anterior and middle mediastinum.

X-ray therapy was given to the anterior and posterior mediastinal areas and the left supraclavicular and axillary areas. One week after radiation treatment was started, there was less pain in the third costochondral area, although swelling persisted. One month later, costochondral swelling and tenderness disappeared completely. Chest roentgenograms made at this time revealed no abnormal lymph node enlargement.

This pregnant patient with pulmonary Hodgkin's disease presented classic symptoms of Tietze's syndrome of six months' duration. X-ray therapy, in this instance, was associated with disappearance of the costochondral swelling and pain. Although the clinical appearance and location of the swelling was quite typical of Tietze's syndrome, the possibility of costochondral infiltration by Hodgkin's disease cannot be ruled out.

COMMENT

The cause of Tietze's syndrome is not known. Dystrophy of the costal cartilage because of malnutrition,[3] tuberculosis,[4] and trauma were suspected by some authors, but none of these factors could be proved in the numerous recent cases. However, mild trauma resulting from sudden movement, such as occurs in paroxysms of coughing, may play a role. Both nontuberculous respiratory disease [5] and rheumatoid arthritis [6] have been noted in many recent instances of the syndrome.

In about 60% of cases, the second costal cartilage alone is involved by Tietze's syndrome. In another 15%, the second cartilage and one or more other costal cartilages are involved. In view of the frequent involvement of the second costal cartilage, it is significant that an inconstant structure, the interarticular sternocostal ligament, which is a strong fibrocartilaginous layer that passes within the joint from the second costal cartilage to the fibrous substance between the manubrium and body of the sternum, is present in practically all anatomic specimens at the second sternocostal junction.[7] This ligament may be found in 20% of cadavers at the third sternocostal joint, in only 10% at the fourth sternocostal joint, and it is still rarer in the remaining sternocostal articulations.[7] The presence of this ligament at the various sternocostal junctions rather closely parallels the incidence of involvement of these cartilages by Tietze's syndrome. It is, therefore, suggested that either microtrauma or involvement by rheumatoid disease of this ligament, or a combination of both factors, may be an important factor in the etiology of this syndrome. We believe that, in our patients, Hodgkin's disease was not necessarily a causative factor, but that by causing dyspnea and cough it may have produced small tears of the interarticular sternocostal ligament with forward rotation of the respective costal cartilage (especially in the patient described in case 1).

Since Tietze's syndrome by itself is a benign condition, the number of histological observations is small. In several recent cases, no pathological abnormalities could be found.[8] Perichondrial thickening,[1c] hyperplasia and metaplasia of cartilage with bone formation,[1c] and deadened appearance and destruction of a small portion of the adjacent rib with fibrosis of the marrow [1d] have been described. The absence of inflammatory changes in both cartilage and surrounding soft tissue is striking in all cases that have been studied pathologically. It is likely that all reported histological changes are normal variations of costal cartilage.[1g]

Radiologically, no specific findings have been reported. In a few instances, an unusual amount of calcification of the cartilages has been seen.[9] The lungs usually are free of disease or show the underlying pulmonary process such as pneumonia or Hodgkin's disease. Lindblom,[10] without distinguishing Tietze's syndrome from osteochondritis of tuberculous or other causes, called attention to the significance of subcostal soft tissue swelling demonstrable by tangential views.

The symptomatology is quite typical. Knowledge that the syndrome exists should lead to its diagnosis more frequently. Many women present themselves for medical examination fearing carcinoma of the breast.[11] Unnecessary operations are performed because of ignorance concerning the nature of the disease.[1h] Inflammatory conditions of the ribs, osteomyelitis, typhoid osteitis, tuberculous and actinomycotic osteochondritis, and syphilitic periostitis, can usually be differentiated by careful clinical, radiological, and bacteriological examination. Sinus tract formation will be seen in the majority of these instances. Primary or metastatic tumors of the ribs (chondroma, metastatic carcinoma, and multiple myeloma) will give characteristic roentgenographic shadows. Fractures of the costochondral junction may occur and cause marked tenderness and increased mobility of the involved segment. Winged chest deformity and postfracture callus formation may be differentiated by the history. An aortic aneurysm eroding the anterior chest wall will be obvious roentgenographically and, at that stage, will usually pulsate. Muscle contusions may give localized chest pains without swelling and disappear rapidly. Since true joints exist between the sternum and the costal cartilages of the second to fifth rib, rheumatoid arthritis may involve these articulations. True rheumatoid arthritis affects multiple joints, whereas Tietze's syndrome usually involves one joint. Presternal edema may be associated with mumps and with mediastinal Hodgkin's disease. In these instances, lymph drainage obstruction produces edematous swelling of the skin over the sternum and surrounding area but no pain.

An infraclavicular soft tissue mass sometimes associ-

3. Footnotes 1 *a* and *k*.
4. Footnotes 1 *a* and *i*.
5. Footnotes 1 *c*, *d*, and *e*.
6. Staehelin, R.: Ueber Affektionen der Rippenknorpel als Ursache von Brustschmerzen, Schweiz. med. Wchnschr. **70**: 592-594, 1940. Footnotes 1 *f* and *g*.
7. Morris' Human Anatomy, ed. 10, Philadelphia, The Blakiston Company, 1942, pp. 297-298.
8. Footnotes 1 *d*, *f*, and *g*.
9. Footnotes 1 *a*, *d*, *g*, and *h*.
10. Lindblom, K.: Subcostal Swelling of Soft Tissues in Osteochondritis, Acta radiol., Stockholm **25**: 610-613, 1944.
11. Footnotes 1*c*, *d*, and *h*.

ated with circulatory disturbances of the arm may be seen in Hodgkin's disease [12] and could be confused with Tietze's disease; however, this mass is located immediately below the clavicle and is not associated with pain and tenderness. Rib involvement by Hodgkin's disease is accompanied by changes that may be demonstrated roentgenographically and does not usually present external swelling. Treatment of costal chondritis consists of reassuring the patient and treating the pain symptomatically. X-ray therapy in uncomplicated cases has been given with indifferent results.[1f] The lesion was excised in some stubborn cases,[1d] but usually this is not necessary.

SUMMARY

Two cases of Tietze's syndrome in patients with pulmonary Hodgkin's disease, a hitherto unreported association, are presented. Tietze's syndrome is a benign, self-limiting disease characterized by tender, nonsuppurative swelling of the upper costal cartilages. Usually, one of the second costal cartilages is involved; multiple involvement of costal cartilages is uncommon. Pain usually persists for a few days to a few weeks, while swelling may continue for months or even years. Nontuberculous respiratory disease or rheumatic conditions frequently precede or accompany the syndrome. Its cause is not well known. On an anatomic basis, it is suggested that small tears or rheumatoid involvement of the inconstant interarticular sternocostal ligament may be an important factor in the etiology of Tietze's syndrome. The large number of cases of the condition reported in the last few years suggests that the syndrome is not uncommon. It should be considered in the differential diagnosis of chest pain and of tumors of the chest wall.

ADDENDUM

Since submission of this article, one of us (A. G. M.) has seen an additional case of the syndrome in an otherwise healthy young Negro woman who complained of left anterior chest pain. On examination, typical swelling and tenderness were found at the second left costal cartilage.

12. Goldman, R.: Infraclavicular Chest Wall Tumors in Hodgkin's Disease, California Med. **76**: 38-39, 1952.

BLOOD PHENOL LEVEL AFTER TOPICAL APPLICATION OF PHENOL-CONTAINING PREPARATIONS

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Calamine lotion, containing 1 or 2% phenol, and a preparation composed of phenol (4.75%) and camphor (10.86%) in aromatized liquid petrolatum [1] (camphophenique®) have been favorites for several decades for the treatment of disorders of the skin. Both preparations have been applied extensively with only a single incident of harmful effect reported for each. This is in contrast to the local changes, such as gangrene, and systemic effects that resulted frequently from application of aqueous solutions containing similar concentrations of phenol. Recently a fatality occurred because of the indiscriminate application of large volumes of a proprietary preparation containing 2.3% phenol in corn oil (foille®). This material was applied to a dressing covering 25 or 30% of a boy's body surface for the treatment of a kerosene burn.[1] The object of this investigation was to follow the level of "free" and of "conjugated" phenol of the blood after cutaneous application of phenol in calamine lotion and in the phenol-camphor-liquid petrolatum preparation, and to determine the factor of safety associated with this type of medication.

METHODS

Each of one group of five men (fair or brunet male medical students) was treated with one dose of 1 gm. of phenol contained in 50 gm. of calamine lotion. After a rest period of two to three weeks, each of the men was exposed to 1 gm. of phenol in the form of 21 gm. of the phenol-camphor-liquid petrolatum. These volumes were adopted since they represented quantities that could be spread conveniently and without loss over 75% of a person's body surface including his shoulders, chest, back, and legs. Clothes were permitted to be donned immediately after an application.

Each of another group of volunteers was exposed to two applications of 1 gm. of phenol. The second dose was applied 90 minutes after the first. A third group was exposed similarly but to three 1 gm. doses, while the last group was exposed to four 1 gm. doses. Each group was treated with phenol in calamine and with the phenol-camphor. At the time of the last application each person was instructed not to remove his underwear until completion of a 24 or 48 hour period of exposure. At this time each subject took a shower and donned clean clothing. Blood samples were drawn at intervals from the cubital vein and analyzed for free and for conjugated phenol. This analytical procedure employed was published elsewhere.[2] This method lays claim to a very considerable degree of specificity and accuracy.

RESULTS

Figures 1 to 4 present the mean concentrations of free and of conjugated phenol in the peripheral blood of the human subjects after the cutaneous application of 1, 2, 3, or 4 gm. of phenol as 2% in phenol in calamine lotion or as 4.75% phenol in the camphor-liquid

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1. Deichmann, W. B.: Local and Systemic Effects Following Skin Contact with Phenol—A Review of the Literature, J. Indust. Hyg. & Toxicol. **31**: 146, 1949.

2. Deichmann, W., and Schafer, L. J.: Phenol Studies: I. Review of the Literature: II. Quantitative Spectrophotometric Estimation of Free and Conjugated Phenol in Tissues and Fluids; III. Phenol Content of Normal Human Tissues and Fluids, Am. J. Clin. Path. **12**: 129, 1942.

petrolatum preparations. The table presents the highest individual values of free and of conjugated phenol observed in any of the volunteers. These figures are of

Peak Values of Free and of Conjugated Phenol in the Blood of Human Subjects After Cutaneous Exposure to Phenol Preparations

Total Quantity of Phenol Applied, Gm.	Period Over Which Dosages Were Applied, Hr.	Highest Values Observed	
		Free Phenol, Mg. %	Conjugated Phenol, Mg. %
Material Applied: 2% Phenol in Calamine Lotion			
1	..	0.64	1.27
2	2	0.62	2.16
3	4	0.80	2.27
4 *	6	0.52	2.14
Material Applied: 4.75% Phenol and 10.86% Camphor in Aromatized Liquid Petrolatum			
1	..	0.56	1.27
2	2	0.76	1.56
3	4	0.62	2.35
4 *	6	0.47	1.67

* The reason why 4 gm. of phenol did not induce higher concentrations in the blood than 3 gm. is not apparent.

significance since they represent the highest concentrations of blood phenol that may be expected in healthy persons exposed to this type of medication.

COMMENT

The observations summarized in this report have shown again that phenol readily penetrates the human skin, and that detoxification by conjugation is initiated immediately.

Comparison of the mean concentrations of free phenol shows that they differ but little regardless whether the dose of phenol applied was equal to 1, 2, 3, or 4

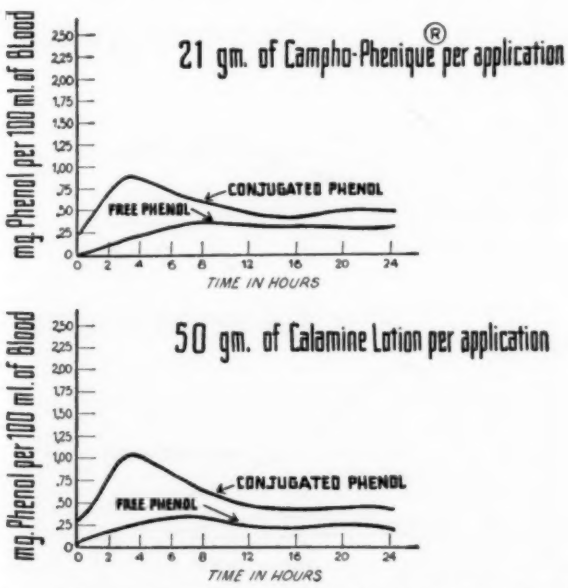
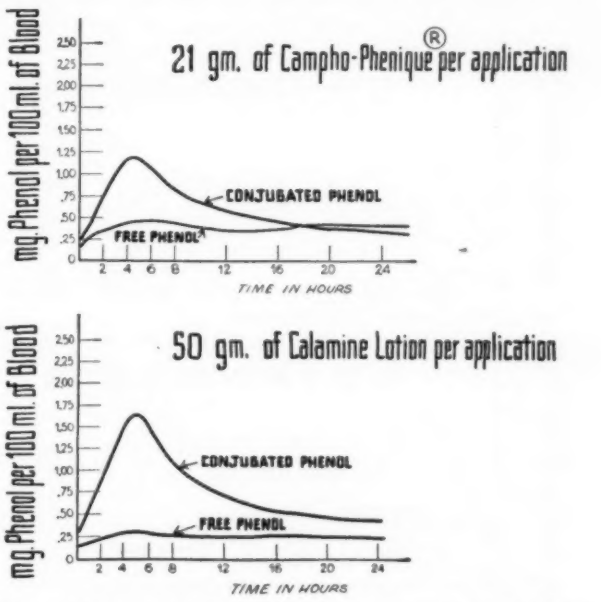

21 gm. of Campho-Phenique® per application
mg. Phenol per 100 ml. of Blood
CONJUGATED PHENOL
FREE PHENOL
TIME IN HOURS
50 gm. of Calamine Lotion per application
mg. Phenol per 100 ml. of Blood
CONJUGATED PHENOL
FREE PHENOL
TIME IN HOURS

Fig. 1.—Mean concentrations of free and conjugated phenol in five experimental subjects, each receiving one application of 1 gm. of phenol. The curves in all of the figures were based on average phenol blood levels.

gm., and regardless whether it was applied in the aqueous or oily medium. Most values of free phenol rose within one to three hours from a control level of about 0.15 mg. to approximately 0.4 mg. per 100 ml. of blood, remaining here until the termination of the exposure period. Comparison of the curves for conjugated phenol reveals, however, within certain limits a direct correlation to the quantities of phenol applied. After a topical dose of 1 gm. of phenol in calamine lotion, conjugated blood phenol promptly rose from a control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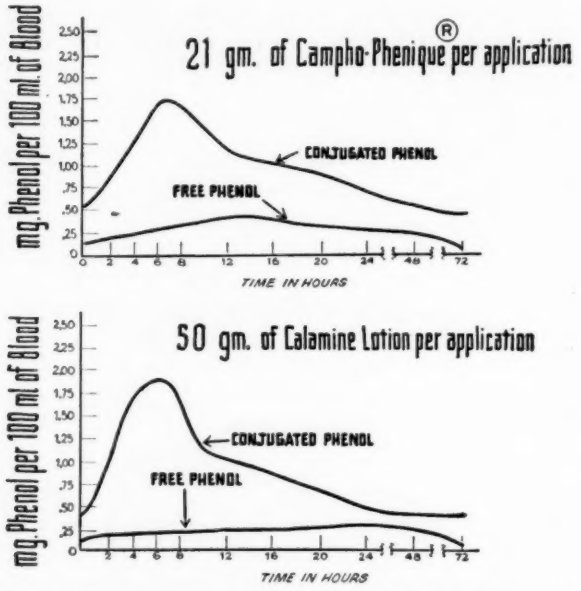
FREE PHENOL
TIME IN HOURS

Fig. 2.—Mean concentrations of free and conjugated phenol in five experimental subjects, each receiving two applications of 1 gm. of phenol at two hour intervals.

level of about 0.35 mg. to approximately 1.1 mg. per 100 ml. When it was applied as campho-phenique® it rose to a mean of 0.9 mg. per 100 ml. (fig. 1). After application of 2 gm. of phenol, the mean peak levels were about 1.65 and 1.2 mg. per 100 ml., respectively (fig. 2), while after 3 gm. of phenol the peak levels were roughly 1.92 and 1.73 mg. per 100 ml., respectively (fig. 3). Four 1 gm. doses did not further increase the levels of free and of conjugated phenol (fig. 4). After application of 3 gm., free blood phenol dropped promptly at the termination of the 48 hour period of exposure. One day later the level was below the preexperimental control. The response to four 1 gm. doses was similar except that free blood phenol did not drop quite so acutely after termination of the 48 hour period of exposure. At no time were there any signs of systemic intoxication. The local effects were described as soothing or cooling followed by a feeling of warmth.

The role of clothing is important. Generally it is believed that bandaging or clothing, when applied to a digit, limb, or body treated with phenol, will increase the local gangrenous and systemic effects. This belief appears to have originated from the many cases of gangrene reported in the older literature. But a careful review of the individual cases reveals that gangrene resulted perhaps primarily because a bandage was kept saturated. Other factors that played a role included the use of aqueous solutions of phenol and possibly the tightness of a bandage. Coverings by means of a loose bandage, clothing, or bed sheet, after the application of one dose of phenol, must be expected to decrease that rate of absorption but influence but little the total amount absorbed of any given quantity of phenol.

Animal studies [3] have revealed that the rates of absorption of phenol through the skin differ considerably depending on the vehicle employed. For instance, a quantity of 71 mg. of phenol was absorbed in one hour through the skin of the tail of a rat after exposure of the tail to 4.7% aqueous phenol; but only 15 mg. was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FREE PHENOL
TIME IN HOURS

Fig. 3.—Mean concentrations of free and conjugated phenol in four experimental subjects, each receiving three applications of 1 gm. of phenol at two hour intervals.

absorbed after similar exposure to the preparation composed of 4.5% phenol and 10.8% camphor in mineral oil. Local effects were equally influenced by the vehicle. Submersion of a tail in 2% phenol in mineral oil produced the same severe degree of gangrene as submersion in 4% aqueous phenol, while exposure to a preparation of 8% phenol and 10% camphor in mineral oil resulted in only a slight discoloration of the distal portion of the tail. Experiments with rabbits produced similar results.

The reason for the different degree of local or systemic injury induced by phenol can be traced in large part to the solubility of this compound in a respective solvent. The solubility of phenol in mineral oil is low, but its cutaneous and oral toxicity in this vehicle is relatively high.[4] In water, phenol is more soluble and the toxicity is less. Phenol in calamine lotion is largely prevented from coming in contact with the skin because of its adherence to the multitude of solid particles of zinc oxide; in phenol-camphor-liquid petrolatum it is held chemically. When applied cutaneously the toxicity of phenol in both of these preparations is of a comparatively low order.

3. Deichmann, W. B.; Miller, T., and Roberts, J. B.: Local and Systemic Effects Following Application of Dilute Solutions of Phenol in Water and in Camphor-Liquid Petrolatum on the Skin of Animals, Arch. Indust. Hyg. **2**: 454 (Oct.) 1950.

4. Deichmann, W. B., and Miller, T.: Certain Physico-Chemical and Toxic Properties of Phenol-Camphor Preparations, abstracted, Fed. Proc. **8**: 286, 1949.

5. Deichmann, W. B.: Phenol Studies: V. The Distribution, Detoxification, and Excretion of Phenol in the Mammalian Body, Arch. Biochem. **3**: 345, 1944.

The highest isolated concentrations of free blood phenol (0.8 mg. per 100 ml.) was observed in a person exposed to three 1 gm. doses of phenol in calamine. The highest concentration of conjugated phenol (2.3 mg. per 100 ml.) was recorded in a volunteer exposed to three 1 gm. doses of phenol-camphor-liquid petrolatum. These concentrations are of significance when compared with those found in intoxications. When the first tremors became apparent, after ingestion of a lethal dose in a rabbit, values for free blood phenol ranged from 5 to 11 mg. and for conjugated phenol from 0.3 to 0.9 per 100 ml. At death, which occurred in a rabbit about 15 minutes after ingestion of phenol, free blood phenol was equal to 30 mg. and conjugated phenol 1.0 mg. per 100 ml.[5] Bischoff reported 23 mg. phenol per 100 ml. of blood in a man who died 15 minutes after the ingestion of phenol.

SUMMARY AND CONCLUSIONS

Two per cent phenol in calamine lotion and a preparation composed of phenol (4.75%) and camphor (10.86%) in aromatized liquid petrolatum were applied to 75% of the body surface of each of a group of male volunteers. A material was applied in a dosage equivalent to 1 gm. of phenol. The maximum quantity placed on the skin was equal to four 1 gm. doses over a period of six hours. A person was permitted to wear his clothing, removing it only to receive an additional dose and to terminate the skin contact after a period of 24 to 48 hours. Regardless of the material applied, free blood phenol rose from a control of about 0.15 to approximately 0.4 mg. per 100 ml. of blood, after either one, two, three, or four doses, each equivalent to 1 gm. of phenol. Conjugated blood phenol quickly rose from about 0.35 to 1.1 mg. per 100 ml. after application of one dose of 1 gm. of phenol in either preparation. Each additional dose induced as a rule a higher peak of the conjugated fraction. The highest mean concentration of

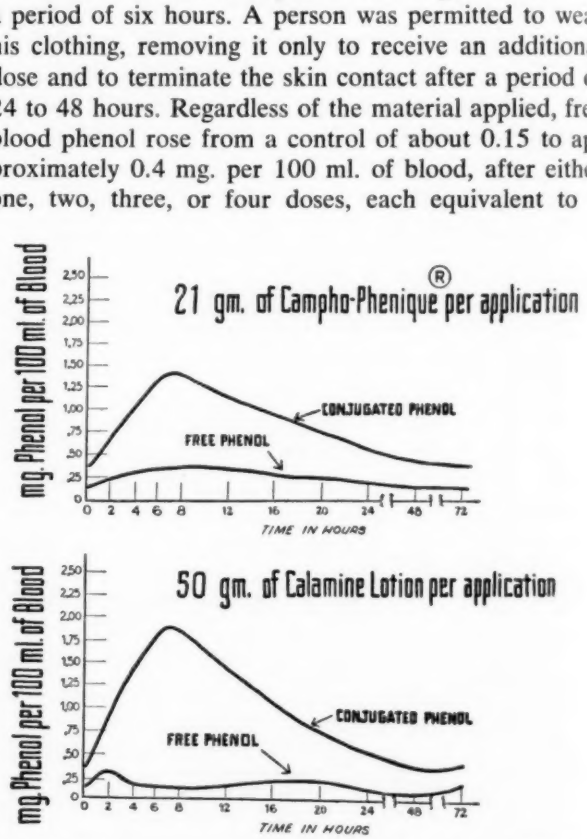
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Fig. 4.—Mean concentrations of free and conjugated phenol in four experimental subjects, each receiving four applications of 1 gm. of phenol at two hour intervals.

conjugated phenol (1.92 mg. per 100 ml.) was obtained in the subjects receiving three 1 gm. doses of phenol in calamine.

Comparison of the highest individual concentrations (0.8 mg. per 100 ml. free and 2.3 mg. per 100 ml. conjugated blood phenol) with values associated with the first signs of intoxication in rabbits (5-11 mg. free and 0.3-0.9 mg. per 100 ml. conjugated phenol) or as reported in acute deaths (30 mg. free, 1 mg. per 100 ml. conjugated phenol) make it appear that the application of the phenol-camphor-liquid petrolatum preparation or treatment with the 2% phenol in calamine lotion, as outlined here, is associated with a considerable degree of safety. No doubt, the intermittent application, as well as the wearing of clothing plus the fact that the volunteers were young healthy persons played a role in the harmlessness of this type of medication.

The results presented here have indicated again that phenol is rapidly absorbed through the skin, and that the bulk becomes rapidly detoxified as long as the rate of absorption does not tax unduly the conjugating detoxifying mechanism. The indiscriminate use of even these dilute preparations must obviously be avoided.

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ACRODERMATITIS ENTEROPATHICA

REVIEW OF THE LITERATURE AND REPORT OF A CASE SUCCESSFULLY TREATED WITH DIODOQUIN

Calvin J. Dillaha, M.D., Allan L. Lorincz, M.D.
and
Olev R. Aavik, M.D., Chicago

The purpose of this paper is to report the successful treatment of a case of a hitherto frequently fatal disease of childhood and to review reports of 20 other cases of this disease found in the literature. Characteristically this disease starts early in life, between the ages of 3 weeks and 18 months in the cases reviewed. Usually the onset is insidious, with a small localized skin eruption close to one of the body orifices or on an extremity. This eruption is frequently accompanied or shortly followed by loss of hair and by gastrointestinal disturbances manifested chiefly by diarrhea. The entire syndrome, including the skin eruption, hair loss, and gastrointestinal disturbances, runs a characteristically, intermittent yet progressive course; apparently spontaneous partial remissions are followed by increasingly severer exacerbations, any of which may end in death.

In recent years, this disease has been clearly defined clinically by Danbolt [1] in the Scandinavian literature. Previously, cases were reported as atypical epidermolysis bullosa or as generalized moniliasis by Wende,[2] Guy,[3] MacLeod,[4] Hopkins,[5] Schlutz,[6] and Baird.[7] In 1936, Brandt [8] considered the disease to be the result of a deficiency of an unknown food element found in breast milk. Danbolt [1] also made this same observation in three of his cases. Because of the peculiar localizaton of lesions on the extremities and around the body openings and because of frequently associated obscure lower gastointestinal tract disturbances, Danbolt named the disease acrodermatitis enteropathica.

We have attempted to review as many cases of this disease as we could find in the literature and to correlate the findings in those cases. These data are presented in the table. In all probability, we have overlooked some cases because in the past there was no uniform name for this disease. Haxthausen, in 1937, reported a case before the Danish Dermatological Society that Danbolt [1] considered to be acrodermatitis enteropathica, but data on this case were not available to us. Despite the various original diagnoses listed in the table, there can be no doubt that all the cases reviewed are of examples of the same entity, because the very distinctive features of the disease were present in each. Photographs of patients with this disease are usually diagnostic.

It is well at the outset to emphasize that this disease differs distinctly from the ordinary type of generalized or systemic moniliasis with which it has oftenest been confused. For example, unlike moniliasis, in this disease, yeasts cannot invariably be demonstrated in the skin lesions, the viscera lack usual monilial lesions, there is an intermittent rather than a steadily progressive course, there is total alopecia rather than partial defluvium associated with cachexia, and there is a distinct familial tendency. Baird,[7] in a recent review of systemic moniliasis, found 40 cases that fitted the classic picture of generalized moniliasis but only three cases of what we now call acrodermatitis enteropathica.

The primary skin lesions characteristic of this disease are vesiculobullous and appear in successive, grouped crops located symmetrically around the body orifices, eyes, occiput, elbows, knees, and on both surfaces of the hands and feet, especially between the fingers and toes and around the nails. There is generally little in-

Because of space limitations the table has been omitted from THE JOURNAL and will appear in the authors' reprints.

From the Section of Dermatology (Dr. Stephen Rothman, Chief of Service), Department of Medicine, University of Chicago.

1. Danbolt, N., and Closs, K.: Acrodermatitis Enteropathica, Acta dermat.-venereol. **23**: 127-169, 1942. Danbolt, N.: Acrodermatitis Enteropathica: Report of 2 Additional Cases, ibid. **28**: 532-543, 1948.
2. Wende, G. W.: Epidermolysis Bullosa Hereditaria, J. Cutan. Diseases **20**: 537-547, 1902.
3. Guy, W. H.: Epidermolysis Bullosa, Arch. Dermat. & Syph. **15**: 30-42 (Jan.) 1927.
4. MacLeod, J. M. H.: Skin Diseases Due to Monilia and Other Yeast-Like Fungi, Brit. J. Dermat. **42**: 549, 1930.
5. Hopkins, J. G.: Moniliasis and Monilids, Arch. Dermat. & Syph. **25**: 599-614 (April) 1932.
6. Schlutz, F. W.: Systemic Thrush in Childhood, J. A. M. A. **105**: 650-653 (Aug. 31) 1935.
7. Baird, K. H.: Unusual Syndrome Associated with Candida Albicans Infection, Pediatrics **4**: 730-734, 1949.
8. Brandt, T.: Dermatitis in Children with Disturbances of the General Condition and the Absorption of Food Elements, Acta dermat.-venereol. **17**: 513-546, 1936.

volvement of the trunk. The vesicles or bullae may be clear or cloudy and have been described as flat-topped. After a few days to a week, these begin to dry and crust, and then lamellar scaling appears. Further resolution results in erythematous patches with peripheral rings of

Fig. 1.—Photograph taken shortly after patient was given cortisone. Note characteristic position of the head.

adherent scales and sometimes central scaling that may give the lesions a psoriasiform appearance. Lesions in different phases of development, from the initial blisters to those nearly completely healed, may be present simultaneously. Secondary bacterial impetiginization and/or yeast infection of the lesions is common. The yeast infection will be considered in detail later. The appearance of new crops of skin lesions has sometimes been associated with upper respiratory infections. Also, at these times, activity of the other manifestations, such as diarrhea and hair loss, is usually increased. Hair loss at one time or another was universal in 18 of the cases reviewed.

Other common features of the disease are mucous membrane and nail changes, retarded body growth, and personality alterations. The mucosal changes usually consist of a white coating on the tongue and buccal mucosas. The frequent involvement of the skin around the nails resulted in dystrophic nail changes in 18 of the reviewed cases; frequently all the nails were involved, and prolonged involvement resulted in complete loss of the nails. Six patients were retarded in their physical development. The most striking examples of this retardation were in two siblings reported on by Schlutz.[6] Mental development, however, was in all instances normal, but frequently the children became withdrawn, peevish, and fretful, and "schizoid features" [1] developed during exacerbations of the skin eruption. Characteristically, the patient prefers to hold his head at an angle and face downward (fig. 1). This feature is absent when the disease is inactive. This peculiar head posture is also demonstrated in the photographs accompanying the reports by Danbolt [1] and Brandt.[8] A familial tendency is also present; the disease occurred in siblings on seven reported occasions.

In the more recent reports, it was noted that in eight of the patients onset of their disease coincided with the time of weaning or when other foods were added to the diet in addition to breast milk. This fact suggested to Brandt that there was some unknown factor in breast milk that was essential to the health of these infants. The disease improved considerably in those instances in which breast milk was added to the diet in relatively small quantities even though it had been some time since natural breast feedings had been discontinued. These observations, along with the high incidence of obscure gastrointestinal dysfunction in 11 of the cases, strongly suggest that the primary focus of the disease, as concluded by Brandt and Danbolt, is in the gastrointestinal tract. In two of his cases, Danbolt could not isolate Candida organisms from the feces.

Hopkins [5] also concluded that the primary focus of the disease was in the gastrointestinal tract. He, however, demonstrated C. albicans in the stools and mouth but not in all skin lesions of his patient and, further, was able to artificially produce lesions identical with the natural lesions by local injections of sterile extracts of C. albicans cultures. MacLeod [4] and Baird [7] observed a similar phenomenon with autogenous vaccines. Hopkins considered the skin lesions to be ids associated with gastrointestinal moniliasis. Schlutz [6] found monilia in the skin lesions as well as in the feces of his patients and in the blood of two. We also were able to find C. albicans (monilia) in the skin lesions of our patient; however, with antimonilial local treatment, the yeasts entirely disappeared from the lesions, although new crops of vesicles continued to appear. This leads us to believe

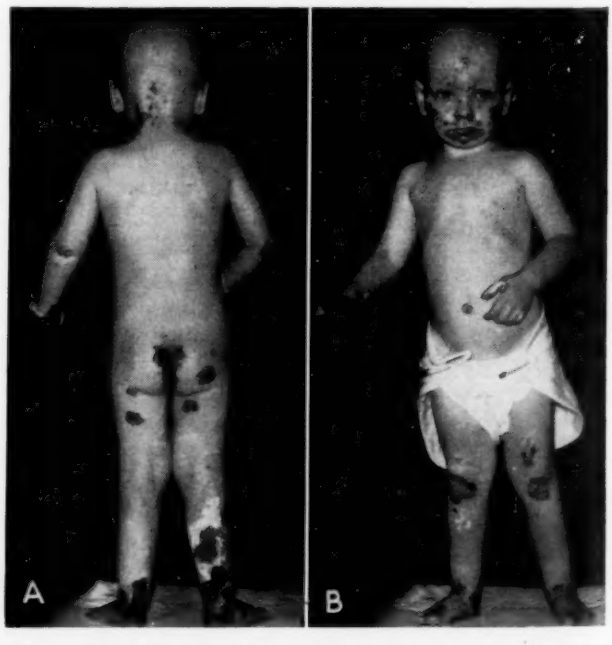

Fig. 2.—Characteristic distribution of cutaneous lesions of acrodermatitis enteropathica. Note alopecia and apathetic facial expression.

that monilial infection of the skin is a secondary phenomenon of a syndrome that has as one of its features an increased susceptibility to such yeast infection.

It is difficult to reconcile the two observations that (1) the disease is caused by a deficiency of a necessary

food factor found in breast milk and is not associated with moniliasis or id therefrom and that (2) the disease is due to moniliasis in the gastrointestinal tract and an associated id. The only apparent common denominator in these two viewpoints seems to be that the focus of the

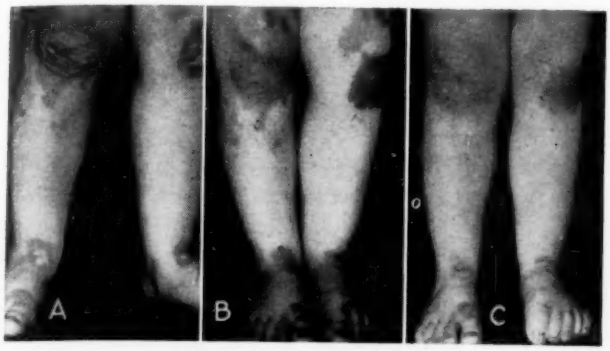

Fig. 3.—*A*, vesicular and erythematous lesions of knees and ankles at the time of initiation of diiodohydroxyquinoline therapy. *B*, resolution of vesicular lesions in same patient after one week's therapy. *C*, only slight erythema remains one month after therapy.

disease is in the gastrointestinal tract. Future investigation of patients with this disease can, with good reason, be directed toward this point.

Therapy of acrodermatitis enteropathica has for the most part been entirely unsuccessful. The disease is frequently associated with remissions of varying length, but they are usually short. Guy reported that one of his patients had considerable improvement in his skin and regrowth of most of his hair at the onset of puberty. Five of the 20 patients reviewed here are dead; the oldest, at the time of death, was 8 years of age. Undoubtedly others in this series have also died. Danbolt reports that all patients he observed eventually succumbed to the disease.[9] Recently, however, Baird [7] reported that the internal administration of thymol on two occasions in one patient resulted in partial recovery. Soderling [10] reported that his two patients responded to hospitalization and conservative management, and Hopkins [5] observed that his patient improved on a sprue diet and relapsed when it was discontinued. Recently we studied a typical case of acrodermatitis enteropathica, and, because of the patient's dramatic recovery, we report the case in detail.*

REPORT OF A CASE

When she was first seen by us, the patient was 2½ years old. A skin disorder had developed when she was 2 months of age and was characterized by recurrent, vesicular, erythematous, crusted dermatitis of the ankles and heels. This skin disease began several days after she was treated for a cold with orally administered penicillin powders. Gradually, the skin of the knees, elbows, fingers, wrists, and perioral and perianal areas became similarly involved. The tongue became heavily coated, and severe halitosis developed. When the patient was 5 months of age, a rapid and total alopecia appeared. The skin eruption had persisted almost unchanged until the time the patient was first seen, except for a period beginning when she was one year old. At that time there was complete remission of all skin lesions and complete regrowth of hair. The only persisting evidence of disease was the heavily coated tongue and a foul breath. After three months, however, the disease exacerbated to its previous state.

The patient's general health and development were otherwise normal. Previous therapy consisted chiefly of various local applications given for long periods of time to combat mycotic and bacterial infection. None of these had any consistent effect on the course of the disease. There was no family history of similar cutaneous disease. The patient, an only child, was delivered by cesarean section and was never breast fed.

Physical examination showed a child of normal development who weighed 15 kg. She had an unhappy appearance; she was withdrawn and cried easily. On admission, the skin eruption involved the forehead, cheeks, perioral areas, neck, elbows, both hands, sides of the fingers, paronychial areas, heels, ankles, inner aspects of the thighs, knees, buttocks and perianal region (fig. 2). The lesions were crusted, superficial erosions surrounded by epithelial fringes. A few bullae were present on the feet. The tongue was heavily coated. The scalp was totally bald, except for a sparse growth of very short, fine lanugo hair, and eyelashes and eyebrows were absent. The teeth were normal.

The patient was hospitalized on two occasions, for 11 weeks originally and, a few weeks later, for an additional 6 weeks. Initially, therapy was supportive and directed toward relieving the secondary infection. Subsequent to the finding that the lesions contained C. albicans, they were treated locally with Castellani's paint and ammoniated mercury ointment. After this treatment, they were found free of yeasts. New vesicular lesions, however, continued to appear.

Toward the end of each hospital stay, the over-all picture showed partial improvement, but, each time, there was subsequent exacerbation of the disease a week or two after the patient went home. During the second period of hospitalization, the patient was treated with cortisone acetate (50 mg. a day orally for one week and 37 mg. daily for the following three weeks). This therapy was accompanied by gradual improvement of the skin lesions, and at its conclusion there was a slight regrowth of terminal scalp hair, eyelashes, and eyebrows. Shortly after therapy with cortisone acetate was discontinued, the vesicular lesions reappeared at all the previous sites, and the hair began to fall out. During the periods of relative quiescence of the disease while she was hospitalized, the patient had only one or two well-formed stools daily; during periods when the disease was active, there were four to six loose stools daily.

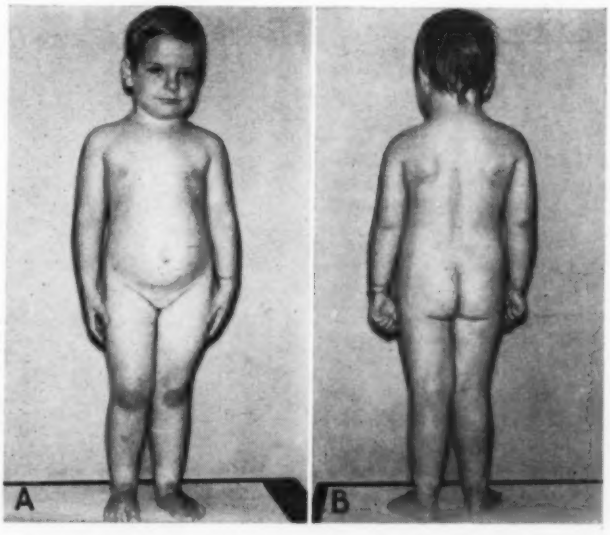

Fig. 4.—Patient eight months after therapy with diiodohydroxyquinoline. Only residual postinflammatory melanosis is evident about the knees. Hair has grown in, and facial expression is alert.

With the flare-up following the cessation of cortisone, the patient received 0.5 gm. of sulfisoxazole (Gantrisin) four times

9. Danbolt, N.: Personal communication to the authors.

10. Soderling, B., cited by Brandt.[8]

* The patient was presented to the Chicago Dermatologic Society in October, 1951, with the incorrect diagnosis of dystrophic epidermolysis bullosa. Dr. Hermann Pinkus suggested there the diagnosis of acrodermatitis enteropathica.

a day for one week, but new lesions continued to appear. Next, the administration of 210 mg. of diiodohydroxyquinoline (Diodoquin) was started.[11] This was followed within four days by strikingly rapid resolution of all skin lesions and, with continued therapy, full regrowth of hair (fig. 3, 4, and 5*B*). In the following months, the residual erythema of the healed lesions faded completely. The stools remained well formed and occurred once or twice daily. Therapy was discontinued after 16 weeks and the patient has remained entirely well to date (eight months after initiation of diiodohydroxyquinoline therapy).

Routine blood cell counts, urinalyses, and a Kahn test, carried out during the first hospitalization, were normal. Results of glucose tolerance tests and stool fat determinations were also normal. Blood chemical examinations of sodium, potassium, chlorides, calcium, phosphorus, alkaline phosphatase, cholesterol and cholesterol esters, pH, and carbon dioxide content revealed nothing abnormal. The thymol flocculation test was normal, while the cephalin flocculation test was 3+, slightly abnormal. The erythrocyte sedimentation rate was 24 mm. per hour.

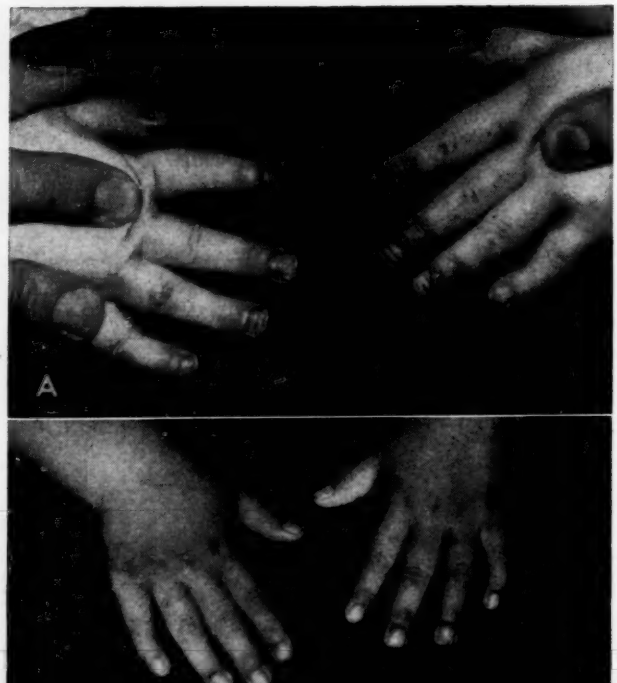

Fig. 5.—*A*, dystrophic nail changes associated with paronychial skin involvement. *B*, regrowth of nails in same patient after therapy with diiodohydroxyquinoline.

Three cultures taken from the tongue, fingers, and hands prior to our initial local treatment grew out C. albicans on subcultures. Fifteen cultures taken on occasion subsequent to antimonilial local treatment failed to show fungi or yeast, but 5 of these grew out a gram-positive coccus. The remainder were sterile. Stool cultures for bacteria revealed only normal flora including Proteus mirabilis both before and after diiodohydroxyquinoline therapy. After diiodohydroxyquinoline treatment, C. albicans was not found in the stools, but nonpathogenic yeasts were present. Examination of fresh stools for parasites, ova, and extracellular fat gave negative results before this therapy. A complement fixation test for Endameba histolytica infection was negative. Serum agglutination tests with C. albicans and normal control serums were positive in dilutions up to 1: 80. An oidiomycin skin test was negative. Histological examination of a skin biopsy specimen taken at the time of the patient's initial visit was interpreted as impetiginized superficial dermatitis with marked papillary edema.

COMMENT

The rapid and complete response of our patient to a medicament that acts primarily on the contents of the gastrointestinal tract and that is but negligibly absorbed systemically further validates the observation that the primary site of this disease is the gastrointestinal tract. Diiodohydroxyquinoline is usually used therapeutically for the elimination of Endameba histolytica from the gastrointestinal tract. It is very unlikely, however, that the response seen in this patient was in any way due to the effect of diiodohydroxyquinoline on such an infection, because not only stool examination for this organism prior to therapy was negative but also the serum complement fixation test was negative and the clinical picture was not that seen in amebiasis. It is more reasonable to assume that the diiodohydroxyquinoline had another effect or effects resulting in this dramatic clinical response. The nature of this response will have to be elucidated in studies on future cases of this disease similarly treated. It is possible that Candida albicans present in the gastrointestinal tract might have been eliminated by such therapy, but our data on this point are not conclusive. It seems unlikely, however, that diiodohydroxyquinoline would have selectively eliminated C. albicans and yet permitted nonpathogenic yeasts to remain in the intestinal tract. Although the mechanism of action of this drug is not at all clear in this instance, it is worth while to emphasize that this therapy offered a prompt and, thus far, sustained cure for a hitherto incapacitating disease that was often fatal.

SUMMARY

Twenty cases of a severe gastrointestinal and cutaneous disease of childhood that fit the classification of acrodermatitis enteropathica are collected from the literature. An additional case that responded dramatically and completely to therapy with diiodohydroxyquinoline (Diodoquin) is reported.

950 E. 59th St. (37) (Dr. Lorincz).

11. Schlomovitz, Elias H.: Personal communication to the authors. Dr. Schlomovitz reported treating a similar patient, who had been given a diagnosis of systemic moniliasis, successfully with diiodohydroxyquinoline (Diodoquin). He suggested that we institute similar therapy.

Intestinal Diverticulosis.—The most common sites for diverticula are the sigmoid colon, the duodenum and the upper jejunum, in that order. It is not uncommon to find diverticula in all three sites in the same individual. Diverticulosis of the colon is the commonest radiological abnormality of the large bowel in subjects over 45. The condition was found in 254 of 2,139 consecutive barium enema examinations during a 13½-year period at King's College Hospital, an incidence of 12%. If examinations on patients of under 35 years are excluded, the figures are 251 in 1,623 examinations, an incidence of 16%. Although occasionally a few isolated pouches irregularly spaced throughout the bowel may be revealed by x-ray, diverticulosis of the colon in its common and characteristic form is a progressive disorder, which commences in the sigmoid and spreads throughout the colon, including, in the most advanced cases, both the vermiform appendix at one extreme and the rectum at the other. —H. C. Edwards, M.D., Diverticulosis and Diverticulitis of the Intestine, *Postgraduate Medical Journal*, January, 1953.

CLINICAL NOTES

RADIATION BURNS FROM DIFFRACTION APPARATUS SIMULATING INFECTIONS

REPORT OF CASES

R. M. Watrous, M.D.
Hazel W. Hodges, M.D.
and
M. J. McAndrew, M.D., North Chicago, Ill.

X-ray diffraction apparatus is a valuable tool in ascertaining the molecular structure of many organic and inorganic compounds and will therefore probably find increasing use in large research laboratories. As with all x-ray equipment, burns may result if proper operating instructions are not followed. This is a report of several such injuries, occurring over a period of two years. Despite the severe local destruction of tissue and the protracted period of healing in each case, the true cause of the lesions was not suspected until one patient himself mentioned the possibility of x-rays as the cause.

CASE 1.—A 38-year-old physicist came to the dispensary complaining of soreness in the distal phalanx of the left little finger. He stated that he had run a small sliver of brass into the finger the day before, had extracted it himself, wiped the wound with alcohol, and continued with his work. He did not mention the fact that he had placed his finger in the beam of the diffraction apparatus and had used a small fluoroscopic screen to see whether any brass remained in the finger. Examination showed a small puncture wound, surrounded by a circumscribed area of redness about 1.5 cm. in diameter. Probing the wound failed to reveal any foreign body. Hot soaks were prescribed. Two days later, blanching of the erythematous area began and within 48 hours was marked. It was now apparent that some powerful necrotizing agent was operating, and the patient was closely questioned about contact with acid or caustic; the replies were all negative. The dead-white necrotic area was opened with a scalpel, allowing a small amount of serous fluid to escape, and revealing a honey-comb appearance of the subcutaneous tissue. Cultures made at this time revealed Staphylococcus albus and diphtheroid organisms. Six hundred thousand units of penicillin were given, and the hot soaks were continued. Two days later, the finger appeared as in figure 1*A*. A roentgenogram revealed no opaque foreign body. Penicillin therapy and hot soaks were continued for six more days, with no appreciable change in the patient's condition. At this time, the 13th day of the illness, the patient was referred to a surgeon with wide experience in hand infections. He was hospitalized and received penicillin therapy with moist packs. Eventually, the necrotic tissue separated and healing began. It was virtually complete by the 44th day of the illness. There was considerable loss of tissue from the finger pulp, and the final scar was atrophic, with a tendency to hyperkeratosis. Figure 1*B* shows the appearance of the finger slightly more than two years after the injury.

CASE 2.—Careful inquiry was made concerning other persons who might have been exposed to the beam from the diffraction apparatus, and it was learned that the wife of one of the research workers had visited the laboratory during an open house function for the staff. The apparatus had been demonstrated, using the woman's right little finger. With some difficulty, she recalled that about a week later, a blister had appeared on the finger. At the time, she had assumed that she must have burned her finger while cooking, though she had no memory of any burn severe enough to produce such a blister. Examination of the finger nine months later revealed a thin, telangiectatic scar on the palmar surface of the distal phalanx, with effacement of the skin ridges (fig. 2*A*).

CASE 3.—About a year after the first case, a 33-year-old chemist, who worked in the same building as the physicist, came to the dispensary with a painful right little finger. He was unable to give any cause for this. Examination revealed a dusky red discoloration of the distal phalanx, and the overlying skin appeared loose. The physician who treated him had not seen the patient in case 1 and treated him conservatively with hot soaks and antibacterial ointment dressings for 12 days. The lesion eventually healed, leaving an atrophic scar.

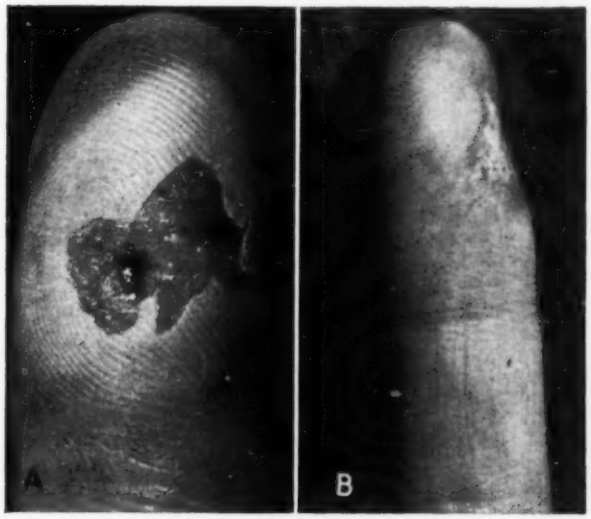

Fig. 1.—Lesion from radiation burn on finger in case 1. *A*, seven days after exposure. *B*, two years after exposure.

About eight months later, the same patient returned, complaining of a blister on the left little finger. This time he suggested that it might be due to x-ray exposure. He recalled that 11 days previously he had placed the finger in the beam of the diffraction apparatus to demonstrate the bones on a fluoroscopic screen. Immediately after the exposure he noticed some tenderness and tingling in the finger tip, and that night he observed some redness on the palmar side of the terminal phalanx. A week after the exposure, the redness still persisted and the center of the red area began to turn yellow. The yellow area enlarged and at the time of his visit occupied most of the palmar surface of the terminal phalanx. Figure 2*B* illustrates the appearance 13 days after the exposure.

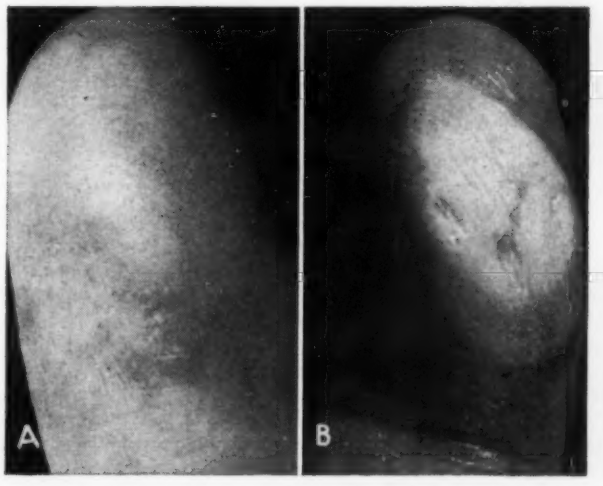

Fig. 2.—Lesions in two cases of radiation burn. *A*, case 2, 9 months after exposure, and *B*, case 3, 13 days after exposure.

From the Plant Physician's Department, Abbott Laboratories.

At this time the patient also complained of pain in the tip of the right thumb, and examination revealed a small area of necrosis on the radial side of the distal phalanx. The patient recalled that he had also viewed his right thumb with the fluoroscopic screen, though for a much shorter time. Six days later, the lesion on the little finger had enlarged to a diameter of about 1½ cm. and was slightly eroded in the center; a swollen and slightly painful epitrochlear gland was present, though there was no sign of lymphangitis. Hot soaks and bacitracin ointment dressings were continued for four weeks, at the end of which the lesion had healed. Examination on the 67th day after the burn revealed marked loss of tissue in the finger tip; the burned area was covered with a thin telangiectatic scar, which showed some tendency to break down in the center.

The apparatus that produced these lesions was a General Electric XRD-3 x-ray diffraction unit. The tube used had a copper anode and was operated at 40 kv. peak, 20 ma., without a filter or collimating device. The exposed fingers were an estimated distance of 10 cm. from the target of the tube; exposures were estimated to last from 1 to 30 seconds.

COMMENT

These cases are described because they could so easily be confused with infection if any history of trauma to the part happened to exist. The week or more that elapses between the radiation injury and the onset of definite necrosis usually prevents the patient from associating the two events. To the examining physician, radiation injury should be suggested by the typical appearance of the burn after the first week; the extensive necrosis, rarely found in any type of infection; the absence of lymphangitis or other systemic signs of infection; and the protracted period of healing. The atrophic scar, loss of tissue, telangiectasis, loss of skin ridges, and tendency to hyperkeratosis are characteristic of the healed lesion.

Needless to say, these accidents occurred because the equipment was used for a purpose for which it was not designed. For diffraction measurements the radiation is filtered through nickel and is collimated to a very narrow beam by a series of heavy metal pinholes. Radiation monitoring in the vicinity of the apparatus when in proper use reveals no measurable exposure.

SUMMARY

Five radiation burns in three persons are described. These resulted from improper use of an x-ray diffraction apparatus for fluoroscopy of fingers. Such injuries may be confused with infections or thermal burns unless the physician elicits the true history. The patients rarely connect the exposure with the subsequent lesion.

Sign of Chronic Cadmium Poisoning.—A characteristic sign of cadmium work of many years duration is the formation of a yellow cadmium fringe at the dental collum, most pronounced on the incisors and front teeth, sometimes also the molars. The cadmium fringe forms a ring around the collum of the tooth. Holstein recently found this fringe on the false teeth of a worker. Presumably it is due to a sulphur compound of cadmium resulting from the reaction of cadmium with the sulfocyanate of the saliva. Valetas observed a cadmium tooth fringe after work of two to four months' duration. The fringe, like the disturbance of olfactory function, can disappear in two to six months without leaving a trace. Since it has not been found in any other intoxication thus far, it may be considered pathognomonic for chronic cadmium poisoning.—E. W. Baader, M.D., Chronic Cadmium Poisoning, *Industrial Medicine and Surgery*, September, 1952.

GIANT RENAL CALCULUS

Ralph R. Landes, M.D., Danville, Va.

Very large renal calculi are unusual because the growth of stones is dependent on continued secretion of urine. Since most stones cause arrest of renal function before they reach giant proportions, stones weighing more than 100 gm. are not often encountered.

The largest stone described in the recent literature is that reported by Duncan [1] to be a "mammoth" kidney stone weighing 315 gm. The largest stone from Joly's [2] series weighed 567 gm. The next largest stone weighed 147 gm. Legueu [3] lists seven "colossal" renal stones that weighed over 500 gm., but most of these were found at autopsy. Except for Joly's and Legueu's reports, there is no record of a solitary renal calculus larger than the one to be described. This case is reported not only because of the massive stone obtained at surgery but also because of the extreme degree of renal damage that still was amenable to repair.

Fig. 1.—Preoperative roentgenogram showing giant calculus that appears to fill right kidney.

REPORT OF A CASE

The patient, a 55-year-old widow, was referred to me because of long-standing frequent and urgent dysuria, right flank pain, weakness, and weight loss. She had been having mild urinary symptoms for many years, but these had increased in severity during the past year and were associated with recurring fever.

The patient's past illnesses were minor except for appendicitis for which an appendectomy was performed in 1920 and menorrhagia caused by uterine fibroids for which hysterectomy was performed in 1931. Physical examination revealed an emaciated, pale, chronically ill white woman who appeared older than her age. The skin fell in loose folds that were

1. Duncan, I. G.: Report of Case of Mammoth Kidney Stone, J. Urol. **56**: 193-195 (Aug.) 1946.
2. Joly, J. S.: Stone and Calculous Disease of the Urinary Organs, St. Louis, Mo., C. V. Mosby Co., 1929.
3. Legueu, F.: Traite chirurgical d'urologie, ed., 2, Paris, F. Alcan, 1921, vol. 2.

indicative of marked weight loss, and it had the yellow pallor suggestive of advanced cancer. A huge, fixed, hard mass was palpable in the right side of the abdomen between the iliac crest and the pubis, and it extended medially to the umbilicus. The blood pressure was 120/70 mm. Hg. The urine had the appearance of pink-tinted cream and had a foul odor.

On cystoscopy, it was found that the bladder wall was covered with a thick debris that was washed away with difficulty. An ureteral catheter was passed to the left renal pelvis with ease but was arrested after it progressed 4 cm. through the right ureter. With the left ureteral catheter still in place, indigo carmine was injected intravenously; it reappeared, in moderate concentration, from the left ureteral catheter. None was observed to issue from the right ureteral orifice. A survey roentgenogram showed a giant calculus that appeared to occupy the whole of a right ectopic iliac kidney. The left kidney contained multiple large calculi of staghorn configuration that filled the entire pelvis and its caliceal ramifications (fig. 1).

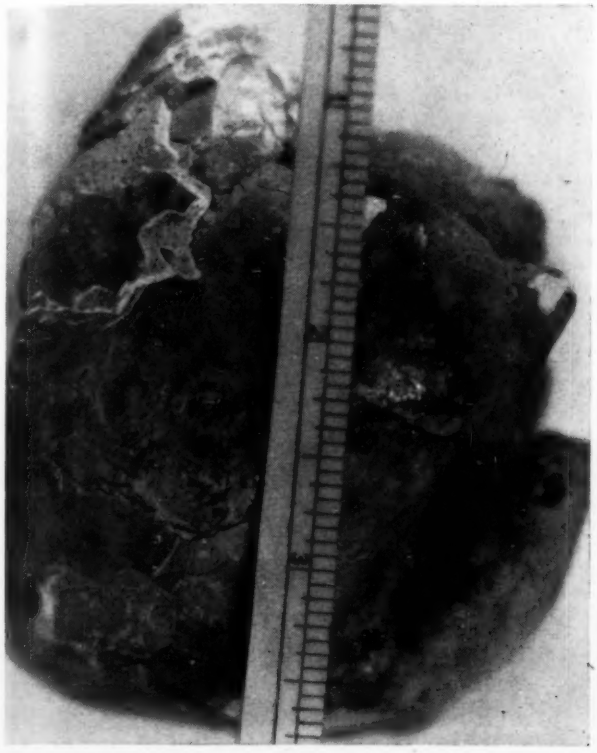

Fig. 2.—Right renal calculus weighing 415 gm. and measuring 10 by 7 by 5 cm.

The patient was admitted to the hospital where laboratory studies disclosed red blood cell count, 2,960,000 per cubic millimeter; hemoglobin level, 7 gm. per 100 cc., white blood cell count, 4,600 per cubic millimeter, with polymorphonuclear leukocytes, 47%, lymphocytes, 51%, monocytes, 1%, and eosinophils, 1%, nonprotein nitrogen, 42 mg. per 100 cc. of blood; reaction to Kahn test, negative; and phenolsulfonphthalein, 5% excretion in 15 minutes, 25% in one hour, and 45% excretion in two hours. The urine was thick with pus, had a pH of 6, and contained no sugar. Culture of the bladder urine was reported to yield Alcaligenes faecalis.

On three successive days, the patient was given transfusions of 500 cc. of whole blood. On Oct. 20, 1950, the functioning kidney on the left side was exposed through a flank incision. It was found that the lower pole of the kidney consisted of only a thin-walled hydrocalyx equal in size to the remainder of the organ. This was the result of occlusion of the communicating infundibulum by a dumbbell-shaped stone. The pelvis was opened, and accessible calculi were removed. By inserting a finger through the pelvic incision into the ramifications of the pelvis, the remaining calculi were brought to bear against the cortex and were removed through parenchymal incisions. The cystic hydrocalyx was excised by scissors at the point at which it joined the normal parenchyma, and the obstructing stone was removed from the communicating infundibulum. The resultant fistula was closed with several mattress sutures, and a running hemostatic suture was placed around the cuff that remained on the lower pole after excision of the hydrocalyx. A nephrostomy catheter was then brought out through the lowest parenchymal incision; the pelvis was closed; nephropexy was performed; and the wound was closed. A liter of blood was given during the procedure.

The patient's recovery from this procedure was uneventful except for the first few days during which urinary output was low and the nonprotein nitrogen rose to 90 mg. per 100 cc. of blood. The output increased rapidly so that at the end of one week the blood nonprotein nitrogen was 36 mg. per 100 cc. and the phenolsulfonphthalein excretion was 45% in two hours. The hemoglobin level was 13.5 gm., and the red blood cell count was 5,000,000.

A right nephrectomy was performed 16 days after the first operation. Since, on the basis of the roentgenographic and physical examinations, I expected to find an ectopic iliac kidney, the patient was positioned on her back and an inguinal extraperitoneal incision was made. It was soon ascertained that this was a flaccid, giant hydronephrosis, which extended from the bony pelvis to the diaphragm, and that the stone had gravitated to the lowest part of the tremendous sac. The incision was then extended directly cephalad to the tip of the 12th rib and then medially along the rib margin almost to the midline. The peritoneum was reflected medially and the procedure remained extraperitoneal. This afforded excellent exposure and allowed easy delivery of the mass and ligation of its vascular pedicle and ureter (fig. 2). The wound was closed around several Penrose drains.

Fig. 3.—Ureteropyelogram taken two years after surgery showing no recurrence of calculi and excellent structure and function.

Recovery from this operation was uneventful. Urograms obtained by injecting contrast medium through the nephrostomy catheter revealed unimpeded drainage down the left ureter. Within a week after these urograms were obtained, the nephrostomy catheter was removed. The fistula closed quickly. The patient gained strength and weight rapidly and was discharged 28 days after the first operation and 12 days after the second operation.

A report from the pathologist stated that the specimen consisted of a massive kidney and a part of the attached ureter. The kidney measured 28 cm. in length. On opening the organ, about 2 liters of foul urine was liberated. Removal of the urine left only a thin-walled sac, with no apparent renal parenchyma. The organ contained a solitary staghorn calculus that weighed 415 gm. Dr. Edwin L. Prien,[4] whose classic work on the composition of urinary calculi has contributed greatly to the understanding of calculi, performed the analysis of the stone. He found that the calculus measured 10 by 7 by 5 cm. The nucleus consisted of apatite (a complex calcium phosphate). The central zone, 1.5 cm. in diameter, was composed of mixed apatite and calcium oxalate monohydrate. The intermediate zone, 0.8 cm. thick, was composed of dibasic calcium phosphate ($CaHPO_4 2H_2O$). A peripheral, thick layer was composed of almost pure apatite. Near the surface, in some places, there was dibasic calcium phosphate mixed with apatite. This stone must have developed in an acidic urine, since calcium phosphate precipitates at a lower pH than apatite. It is interesting, because of the absence of magnesium ammonium phosphate hexahydrate, that a stone could become so large without alkaline infection developing.

The patient has been seen regularly for the past two years. Retrograde pyelograms of the left kidney show no recurrence of the stone and excellent structure and function (fig. 3). The urine is free of pus, and the patient appears completely well and manages a busy household.

SUMMARY

The case of a patient with bilateral renal staghorn calculi, one of which weighed 415 gm., is reported. This case exemplifies the extreme degree to which renal disease may progress and still be cured.

745 Main St.

4. Prien, E. L., and Frondel, C.: Studies in Urolithiasis: Composition of Urinary Calculi, J. Urol. 57: 949-994 (June) 1947.

URETEROILEAL NEOCYSTOSTOMY

USE OF ILEAL SEGMENT AS SUBSTITUTE URETER: REPORT OF A CASE

Frank J. Rack, M.D., Cleveland

In cases in which a portion of ureter is either accidentally or intentionally sacrificed, a difficult surgical problem presents itself. If the missing segment is short, end-to-end ureteroureteral anastomosis or ureteroneocystostomy may be satisfactorily completed. When an appreciable length of ureter is sacrificed, however, the remaining ureteral segments may be too short to permit mobilization and anastomosis without tension. If the bladder and kidney are normal, maneuvers such as ligation of the proximal end of the ureter, with or without subsequent nephrectomy, formation of a cutaneous ureterostomy, or ureterocolic anastomosis are undesirable for many reasons.

Experience with ileal pouches created as substitute bladders suggested the use of an isolated segment of ileum as a substitute ureter interposed between the bladder and the proximal portion of ureter in order to maintain continuity of the urinary tract if a fairly long segment of ureter is missing. The feasibility of this procedure is demonstrated by the following case report.

From the Department of Surgery, Western Reserve University School of Medicine and City Hospital.

REPORT OF A CASE

A 48-year-old Negro woman was admitted to the hospital because of rectal bleeding and painful bowel movements of one month's duration. Examination revealed a large obstructing mass 6 cm. above the anorectal line. There was some fixation

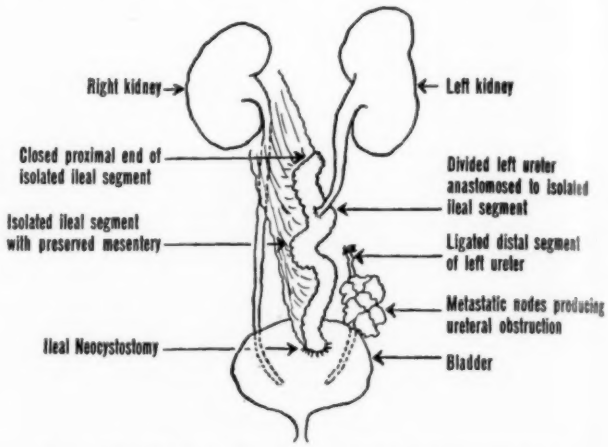
Right kidney
Left kidney
Closed proximal end of isolated ileal segment
Divided left ureter anastomosed to isolated ileal segment
Isolated ileal segment with preserved mesentery
Ligated distal segment of left ureter
Metastatic nodes producing ureteral obstruction
Ileal Neocystostomy
Bladder

Fig. 1.—Schematic representation of ureteroileal neocystostomy.

of this mass posteriorly, but neither the vagina nor the bladder was involved. A biopsy of the mass indicated adenocarcinoma of the rectum. On the 12th hospital day, after preliminary studies had been completed, an exploratory laparotomy was done. Large metastatic nodules were found in the liver and along the aorta. The rectal mass filled the entire hollow of the

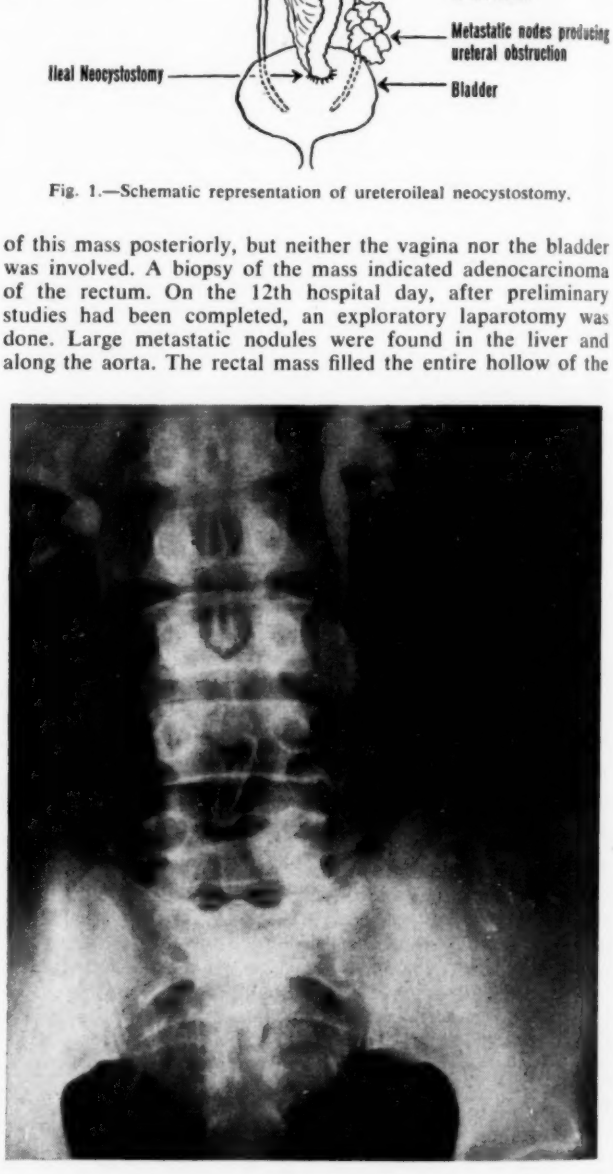

Fig. 2.—Intravenous pyelogram made three months postoperatively reveals normal function of both kidneys, resolution of left hydroureter and left hydronephrosis, and some visualization of dye in the ileal segment utilized as a substitute ureter.

sacrum and adhered to the lateral pelvic walls. Both ureters were densely adherent to the retroperitoneal structures, and the left ureter passed through a large mass of lymph node tissue that was involved with metastases just distal to the left sacroiliac joint. Because obstruction of both ureters seemed immi-

nent it was elected to substitute an isolated segment of ileum for the portion of the left ureter involved in the metastatic lymph nodes. The left ureter was divided above its entrance to the tumor mass, and the distal segment was ligated. A 12 cm. segment of the lower ileum was then prepared and isolated to preserve its blood supply. Intestinal continuity was reestablished by end-to-end ileoileal anastomosis. The proximal end of the ileal segment was closed with two rows of absorbable sutures. The proximal end of the divided left ureter was applied to the side of the ileal segment by means of a mucosa-to-mucosa anastomosis reinforced by a second outer row of sutures. The distal end of the ileal segment was anastomosed to the dome of the bladder (fig. 1). A palliative transverse colostomy was performed through a stab wound in the upper abdomen. The patient made an uneventful recovery and was discharged from the hospital on the 15th postoperative day. Urinary output and blood chemistry determinations remained at normal levels postoperatively. Intravenous pyelograms made on the 11th postoperative day showed some hydroureter and hydronephrosis on the left side. Intravenous pyelograms made three months postoperatively revealed a normal upper urinary tract on both sides and normal function of both kidneys, and the substitute ureter was visualized (fig. 2).

COMMENT

In human subjects the use of a segment of small intestine to replace a strictured portion of one ureter has been described only once previously.[1] A dilated ureter was anastomosed in end-to-end fashion to an isolated segment of small intestine, and the distal end of the intestinal segment was utilized in a side-to-side intestinal neocystostomy. In that report, although the operation was successful, no postoperative function studies were done. Shortly after the patient in the case reported here was operated on, McLean and Fais [2] reported their experiments in dogs in which segments of small intestine were successfully used as substitute ureters. No other reports are available.

In the postoperative period immediately following ureterointestinal anastomosis, some proximal ureteropelvic dilatation often develops. This is demonstrated by the transient hydronephrosis that developed in my patient and may possibly be attributed to edema at the ureterointestinal anastomosis. Pyelograms made three months after the operation revealed fairly complete resolution of the hydronephrosis and good function in both kidneys. Late stricture formation at the site of either the ureterointestinal or the ilealvesical anastomosis is not likely when a mucosa-to-mucosa union is created.

Ureteroileal neocystostomy as described in this patient, either on one side or bilaterally, may prove to be of value in certain situations encountered in surgery. When a ureter is severely damaged as the result of trauma, when a ureterovaginal fistula cannot be managed by classic methods, or when en bloc resection of a malignant or a benign tumor requires sacrifice of a portion of ureter an isolated segment of ileum may be utilized to maintain normal urinary flow.

SUMMARY

A case is reported in which an isolated segment of ileum was successfully used as a substitute ureter by forming an anastomosis between the bladder and the proximal end of a divided ureter. Situations in which this type of operation might be utilized are listed.

3395 Scranton Rd. (9).

1. Nissen, R.: Reconstruction of the Ureter, J. Internat. Coll. Surgeons 3: 99, 1940.

2. McLean, D. W., and Fais, O. G.: The Use of Segments of Small Intestine as Ureters, J. Urol. 68: 190, 1952.

A NEW TYPE OF "ARMCHAIR" THERAPY CART

Benjamin V. Klain, M.D., Indianapolis

In recent years the value of making patients ambulatory as early as possible has been stressed. Prolonged bed rest may produce many harmful sequelae, such as loss of appetite, constipation, thrombophlebitis, osteoporosis, negative nitrogen balance, hypostatic pneumonia, atelectasis, and prostatic difficulty.[1] This applies especially to debilitated patients with cardiac disease, because the recumbent position permits maximal venous return from the periphery with associated increases in blood volume and augmented volume work for the heart.[2] The sedentary position in a chair, with the feet lowered, affords more rest to the heart than does a recumbent position.[3]

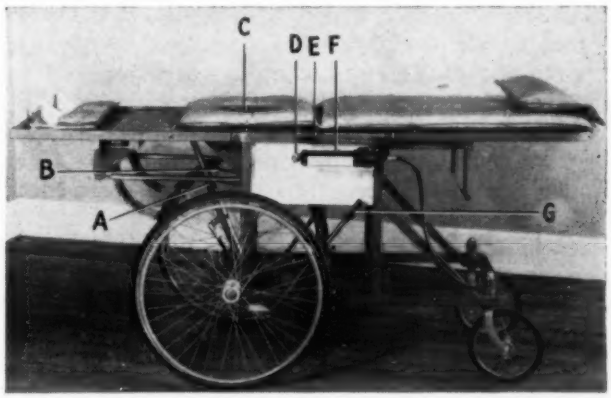

Fig. 1.—*A*, hydraulic lift; *B*, part of seat where bed pan is placed and lifted; *C*, hole in seat for bed pan; *D*, air valve used for adjusting cart to wheel chair position; *E*, pump handle; *F*, hydraulic pump; and *G*, brake.

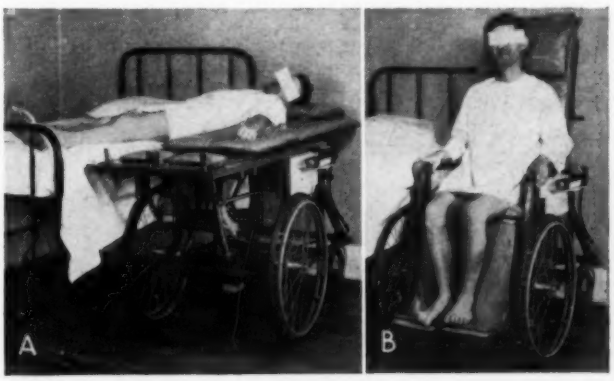

Fig. 2.—*A*, the cart in extended position, allowing the patient to be easily transferred from bed to cart or cart to bed; *B*, the cart forms a comfortable chair upon opening of the air valve on the pump.

A new type of wheel chair has been devised to facilitate early ambulation with minimal exertion by the patient. The chair can be converted from a hospital cart (fig. 1) to a standard-appearing wheel chair (fig. 2*B*) by means of a small hydraulic pump. The cart position

1. Dock, W.: Evil Sequelae of Complete Bed Rest, J. A. M. A. 125: 1083 (Aug. 19) 1944.

2. Levine, S. A., and Lown, B.: "Armchair" Treatment of Acute Coronary Thrombosis, J. A. M. A. 148: 1365 (April 19) 1952.

3. Levine, S. A.: Some Harmful Effects of Recumbency in Treatment of Heart Disease, J. A. M. A. 126: 80 (Sept. 9) 1944.

is the same height as the standard hospital bed (fig. 2*A*); thus a patient may be readily transferred from the bed to cart and then the cart converted into a wheel chair by operation of a single lever. The wheel chair is also adjustable in respect to the height of the seat and the inclination of the back rest. The chair operates in reverse to form a cart, and the patient is easily returned to bed.

The chair also may be adjusted for use with a bed pan. The usual method of lifting the patient on the bed pan has been reversed. The center section of the chair seat is dropped by means of a lever (fig. 1), and a pan is inserted and lifted to the patient by means of the same lever. This procedure has been received enthusiastically by orderlies as well as by patients.

The chair is operated in the following manner: The back is anchored to a ball-bearing fulcrum about 10 in. from the bottom; hence, the back acts as a lever, and the patient's leaning back causes the bed or cart to form, because the back is hooked to the leg piece with push rods. If a patient is lying on the cart and desires a wheel chair, he merely sits up, shifting all of his weight to the seat, and a chair is formed. The chair can be locked in any position and can be propelled by the patient. Conversion is aided by a hydraulic pump, and the valve of the pump allows the patient to easily adjust the chair to the position desired.

The cart has been used at the Indianapolis General Hospital, under supervision of the medical residents. It has been found useful in getting debilitated patients out of bed and onto a wheel chair easily without danger of dropping or overexerting them, and it has been successfully used in patients with myocardial infarction and cerebral accidents and for amputees and obese patients.

4157 College Ave.

LONG SURVIVAL IN MALIGNANT MELANOMA

REPORT OF A CASE

Anthony R. Galgano, M.D., New York

The following case seems worthy of a report because of the long time between the detection of the primary lesion and the subsequent first appearance of pulmonary metastases, and the unusually long time between the development of metastases in the lung and the death of the patient.

A 46-year-old white single woman in 1912 had a small lesion of the skin of the right temple excised. The nature of this lesion is not known. In 1932 a second lesion appeared in the same area and proved to be a melanoma histologically. A routine chest film taken in February, 1943, disclosed a small nodule vaguely distinguishable at the level of the second left anterior intercostal space. The patient's first symptoms began in August, 1943, when she was hospitalized because of pneumonia. Chest films disclosed pneumonia, a pleural effusion, and the nodule at the second left intercostal space. The latter persisted after clearing of the pneumonia and effusion.

In April, 1945, the patient was seen to have a new nodular shadow in the right hilum, and deep roentgen therapy was given (factors unknown) because the shadows were believed to be malignant metastasis. A second course was given several months later equivalent to 4,700 r measured in air total to three fields over a three month period (2,000 r measured in air to an anterior field, 2,000 r measured in air to a posterior field, and 700 r measured in air to a lateral field). The factors used were 200 kv. (peak), 50 cm. T.S.D., and 0.5 mm. Cu and 1 mm. Al filter.

On Sept. 21, 1948, the patient was seen for the first time at Grasslands Hospital with complaints of dull aching in the right anterior chest, night sweats, headaches, and hot flashes. Radiographic examination of the chest (fig. 1) disclosed four rounded smooth shadows in the lung fields. The largest one anterior to the right hilum was lobulated. At the level of the left ninth rib behind the heart was a loculated pocket of pleural fluid. A bronchogram was normal.

Aspiration of the encapsulated fluid withdrew some dark creamy fluid, and studies of this included a Papanicolaou, formaldehyde, and Bouin's block and culture. Dr. D. Spain's microscopic examination disclosed "a small amount of black pigment suggestive of melanotic pigment. No malignant cells are identified." Laboratory studies were done: 300 cc. tidal air, 1,600 cc. supplemental air, 1,500 cc. complemental air, 3,100

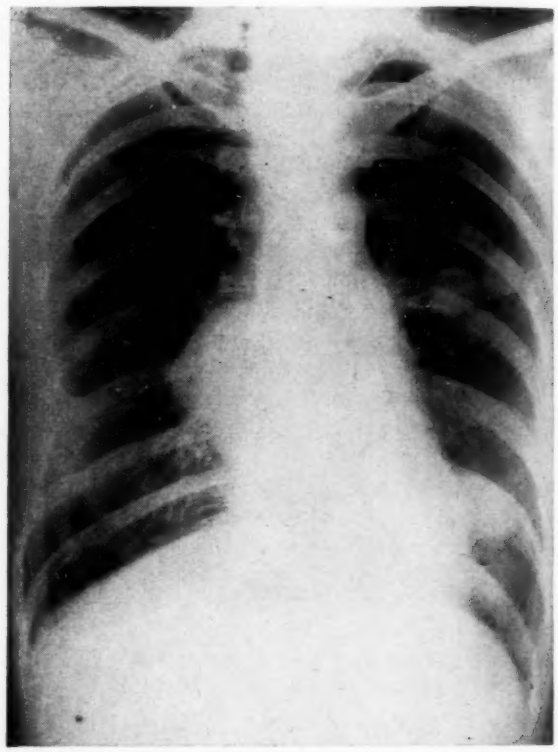

Fig. 1.—Metastatic masses of malignant melanoma (September, 1948).

cc. vital capacity, 100 to 1,500 cc. residual air, 2,600 to 3,100 cc. alveolar air, 4,600,000 red blood cells with 12.5 gm. hemoglobin, 7,900 white blood cells, and 150,000 platelets. The erythrocyte sedimentation rate was 16 mm. in a half hour and 87 mm. in one hour; old tuberculin in a dilution 1:100, 1+.

At readmission to the hospital an exploratory thoracotomy in April, 1949, disclosed a 4 in. fixed mass with smooth contour and dark brownish-red appearance in the right hilum involving the structures of the right middle and right lower lobes as well as the interlobar fissure. On cutting a 1 cm. wedge of tumor, the mass was soft and extremely friable.

Microscopic examination of the biopsy as reported by Dr. Spain read "The sections show irregular areas of tumor with portions of intact fibrous tissue capsule. The tumor consists of large polyhedral cells with eosinophilic cytoplasm which varies in density. The nuclei are round and oval and are often large and hyperchromatic. Scattered cells are filled with yellow to dark brown finely granular pigment. There is invasion of the fibrous capsule." The diagnosis was secondary malignant melanoma. Three days later a radiograph showed a marginal hydropneumothorax on the right. A thoracentesis was done,

and 160 cc. of grossly dark fluid was obtained. The patient was discharged on the 14th postoperative day.

In July, 1950, and January, 1951, melanotic lesions recurred in the skin of the right temple, and histological study following excision of both recurrences disclosed malignant melanoma. From this time the patient's course was steadily downhill, and she died Feb. 21, 1952, 40 years after the appearance of the original lesion of the right temple.

Before death a urine specimen was tested with 10% ferric chloride, bromine water, and air, and was found markedly positive for melanin. A chest radiograph (fig. 2) nine years after the first radiographic evidence of a metastatic lesion disclosed further enlargement of the nodules.

COMMENT

This case presents two interesting features: first, the long interval between removal of the primary lesion and development of pulmonary metastases. Howes and

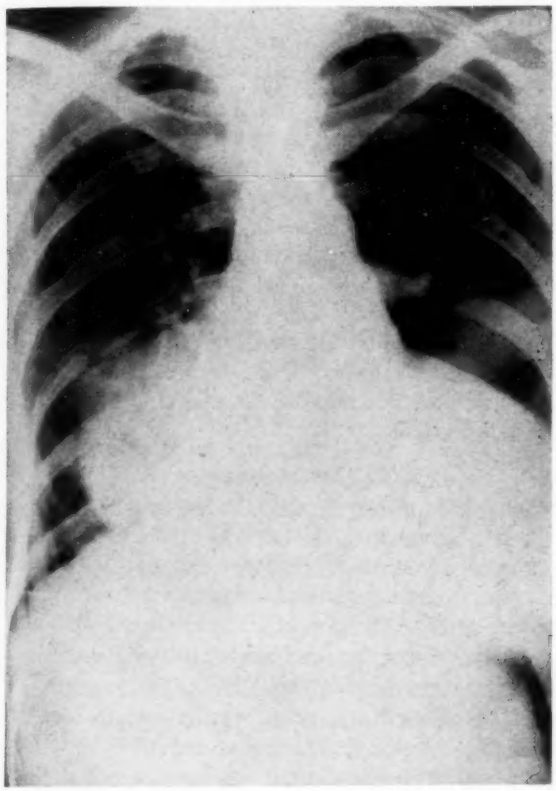

Fig. 2.—Extent of metastatic disease before death (February, 1952).

Birnkrant [1] reported pulmonary metastases in 8 of 32 cases, appearing within an average interval of 35.4 months after evidence of activity of the primary lesion was noted. In this case report, pulmonary metastases were detected after an interval of 11 years, and if the lesion removed at age 9, for which there is no histological proof, is considered malignant, the interval would be 31 years.

The second interesting feature is the long survival with pulmonary metastases. Usually, when pulmonary metastases occur in malignant melanoma death follows within one year. At the Presbyterian Hospital,[2] the longest known survival with pulmonary metastases was four years based on time of onset of cough. In the case presented, the patient remained alive nine years after the first detection of pulmonary metastases from x-ray examination.

SUMMARY

An unusual case history of malignant melanoma is presented. Two points are stressed: (1) the long interval between removal of the active primary lesion and the development of pulmonary metastases (11 years) and (2) the long interval between the detection of pulmonary metastases from x-ray examination and the death of the patient (9 years).

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SEVERE PERFORATING WOUND OF HEAD AND NECK FROM A BLUNT OBJECT

REPORT OF A CASE

Franklin R. Black, M.D.

and

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Medical history records many instances of severe trauma with recovery of the patient. Head injuries, in particular, are remarkable because of the concentration of vital structures in that region. The following case is presented because of the bizarre nature of the injury and the complete recovery of the patient.

On Sept. 18, 1949, a 28-year-old man was driving along a mountain road when he failed to make a turn and his automobile rolled down an embankment. The car struck a wire fence, the top rail of which was a steel pipe one inch in diameter. A projecting portion of this pipe penetrated the windshield, passed between the spokes of the steering wheel, and struck the driver in the right malar region. It passed through the tissues of the right side of the face, right antrum, oropharynx, and the left side of the neck to emerge from the trapezius region of the left shoulder. The man, dazed but conscious, was impaled by the pipe, which extended beyond the wound of exit into the seat cushion. After the pipe had been divided anteriorly and posteriorly with a hacksaw, the injured man was carried directly to the office of Dr. Charles E. Long of Paonia, Colo. On arrival he was unconscious, his pulse weak and thready, and his blood pressure unobtainable, but after first aid and supportive therapy, he began to move slightly and moan. Despite the possibility of fatal hemorrhage, the physician elected to remove the pipe. This was done without change in the patient's condition.

The posterior portion of the right maxillary alveolar ridge was now seen hanging free in the oral cavity with three teeth intact. This was excised. The wound of entrance and exit were superficially cleansed and sterile dressings applied. The following morning the patient was transferred to the Veterans Administration Hospital in Grand Junction, Colo. His chief symptoms were pain in the wound, difficulty in breathing due to mucus in the posterior pharynx, inability to expectorate or swallow, loss of sensation in the left thumb, inability to abduct the left arm or flex it at the elbow, and blurred vision. The history was noncontributory except that injuries had been incurred in an automobile accident in 1946, when the patient suffered fractures of the wrists, left clavicle, and skull with cerebral concussion. There were no persistent sequelae.

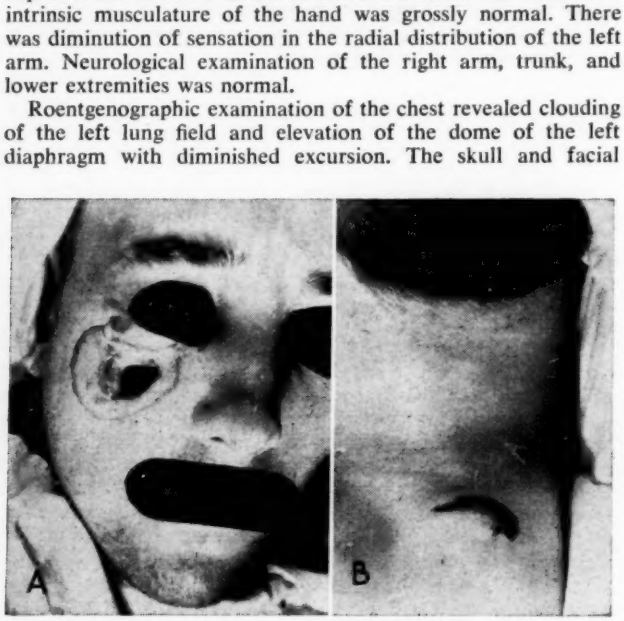
Clinical and Laboratory Findings.—The patient was a well-nourished, poorly muscled white man of slight stature, acutely ill, with the right side of the face and left shoulder bandaged. He could not move his left arm. He spoke and breathed with difficulty owing to partial obstruction in the pharynx. Mentally,

From the Veterans Administration Hospital, Grand Junction.

he was clear and competent. There was a round puncture wound 3 cm. in diameter (see figure) in the center of the right malar eminence exposing the antrum. The inferiomedial wall of the antrum was destroyed. Through this opening, the posterior border of the tongue and the soft palate were visible. The jaw was not dislocated, but it was fixed in a semiopen position by muscle spasm. There was ecchymosis of the right periorbital tissue. The patient's head was pulled to the right by muscle spasm. There was diffuse swelling of the left side of the neck, and near the border of the left trapezius a gaping, jagged, dirty wound could be seen. Subcutaneous emphysema was present throughout the neck.

The pupils, which were equal, reacted to light and in accommodation. There was horizontal diplopia. Respiratory excursion on the left was decreased, with slight hyperresonance and absence of breath sounds throughout the left side of the chest. The heart was normal. Blood pressure measured 105/75 mm. Hg. The pulse rate was 140 beats per minute and was regular. The abdomen was normal. The left arm was flaccid. There was inability to abduct or extend the shoulder, flex the elbow, or supinate the forearm. Dorsiflexion of the wrist was weak. The intrinsic musculature of the hand was grossly normal. There was diminution of sensation in the radial distribution of the left arm. Neurological examination of the right arm, trunk, and lower extremities was normal.

Roentgenographic examination of the chest revealed clouding of the left lung field and elevation of the dome of the left diaphragm with diminished excursion. The skull and facial



A, wound of entrance, and *B*, wound of exit.

bones showed an old healed fracture of the right frontal bone, a highly comminuted fracture of the right antrum, and fracture of the right inferior orbital ridge. Laboratory studies were noncontributory.

Clinical Course.—On admission an adequate airway was maintained by aspiration and oropharyngeal intubation. The subcutaneous emphysema of the neck gradually diminished. The right corneal reflex slowly recovered, and the horizontal diplopia subsided spontaneously. The oral mucosa began to fill the defect of the soft palate and the mouth. On the 11th day after injury, there was some returning function in the left deltoid, biceps, and extensor carpi radialis muscles. On that date, the wound of the shoulder was débrided and closed. During this interval the patient was able to ingest liquids.

On Oct. 6 more satisfactory roentgenograms revealed fracture dislocation of the 4th and 5th cervical vertebrae, with posterior displacement of C_5 on C_6, so Crutchfield tongs with traction were applied to the skull. After this, the pain in the left shoulder and arm improved. At this time, increasing trismus made nursing care and nutrition difficult. To overcome that difficulty, metal braces equipped with hooks were fitted over the teeth so that countertraction could be exerted by means of elastic bands. On Nov. 10, to provide adequate drainage of the right antrum in preparation for plastic surgery, Dr. Richard Waldapfel performed a prophylactic right transfacial Caldwell-Luc procedure with the patient under local anesthesia. In order to ambulate the patient and still maintain traction on the cervical spine, a body jacket was applied. A metal davit, incorporated in the posterior part of the cast, extended up and over the head, and this was used to support elastic traction to the Crutchfield tongs. This traction device proved satisfactory.

On Dec. 2, débridement and plastic repair of the wound of entrance was carried out with the patient under local anesthesia. The wound healed by primary intention. Motor power and range of motion in the left arm continued to improve. On Feb. 28, 1950, with the patient under endotracheal anesthesia, Dr. Robert R. Robinson excised the cicatrix that was causing fibrous ankylosis of the right temporomandibular joint, lining the oral defect thus created with a split thickness skin graft supported by a stent of dental compound. The postoperative course was uneventful, although the patient's mouth had to be blocked open to the maximum clearance obtainable by another dental compound splint. This position was maintained without undue discomfort. During this interval, the patient was fed by tube. On removal of the stent and splint, there was ¾ in. clearance between the incisors, and there was satisfactory lateral motion. The patient was then able to eat solid foods and began to gain weight. During this time there was complete return of motor and sensory function in the left arm.

The skeletal traction to the skull and neck was removed on Dec. 16 with no ill-effects other than muscular weakness, which gradually improved, allowing the patient to be ambulatory without support. His improvement was progressive from that time onward. The patient elected to forego further treatment and was discharged May 15, 1950, as having received maximum hospital benefit.

This case is reported because it represents the forceful passage of a large blunt object through the face, pharynx, and neck that did not result in fatal injury to the patient and following which recovery was complete. The uneventful removal of the segment of pipe without immediate and serious sequelae is, perhaps, no less remarkable than the injury.

SUMMARY

A case is reported of a perforating wound of the head and neck, incurred in an automobile accident when a pipe, one inch in diameter, entered the face through the right malar bone, transfixed the antrum and pharynx, and produced a compound fracture of the 4th and 5th cervical vertebrae together with posterior displacement and angulation on the 6th. The pipe then slipped to the left, passing through the brachial plexus and erupting through the left trapezius muscle and overlying skin. Multiple operative procedures were required. The patient made a complete recovery.

Water Chlorination.—Chlorine was first used as a routine disinfectant for public water supplies in 1908 when bleaching powder or hypochlorite was used to treat the water supply for Jersey City, N. J. The success of this project, plus the fact that the country was still in an era of major typhoid epidemics, resulted in a rapid acceptance of this method of water purification. Epidemiologically, expectations were realized, and the transmission of typhoid and other enteric diseases through drinking water was sharply reduced. The bacteriologist could verify the effectiveness of chlorination by counting bacteria before and after small amounts of chlorine were added to contaminated water and noting the reduction effected.

The Army early recognized the value of chlorine as a water disinfecting agent and sponsored research and development in this field. The first application of liquid chlorine to a water supply in this country was at Fort Myer, Va., by Major (later Brigadier General) C. R. Darnall, MC, USA.—Stanley J. Weidenkopf, Lt. Col., MSC, USA, Water Chlorination, *United States Armed Forces Medical Journal*, February, 1953.

TORSION OF THE SPERMATIC CORD

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and
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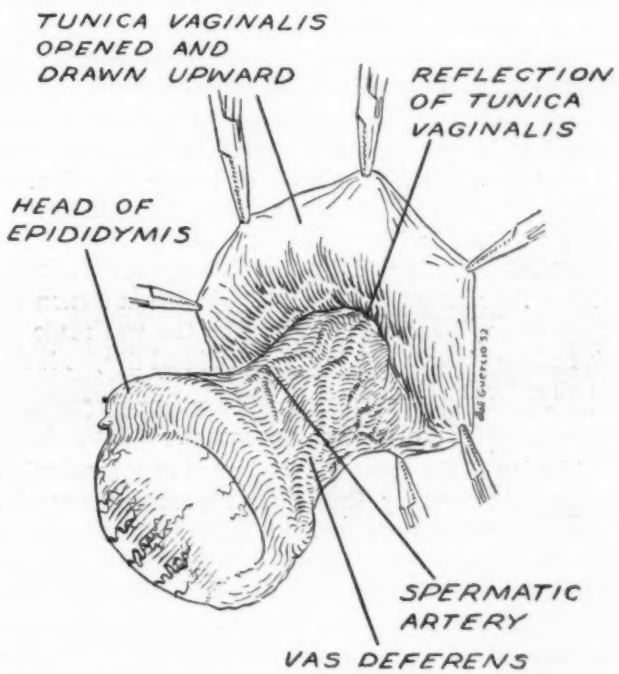
Prompt recognition and surgical treatment of torsion of the testis can save an organ that otherwise usually becomes the site of hemorrhagic necrosis and eventual atrophy. The condition, though not common, is serious for this reason and should be regarded as a surgical emergency. Twenty cases occurred among 153,000 general hospital admissions at New Haven Hospital from 1938 to 1952. We have reviewed these cases in an attempt to characterize the disease as it has been seen here and to compare our observations with those made by others since Delasiauve's [1] original description in 1840. Of the 20 patients included in our study, 9 were seen early enough to permit operative reduction and preservation of the testis. In four cases, hemorrhagic necrosis was present by the time of operation, and orchidectomy was required. Spontaneous reduction of torsion occurred in five patients. Two patients seen late in the disease showed gradual atrophy of the affected organ.

PATHOGENESIS

Torsion of the spermatic cord manifests itself as two distinct entities. In infancy, torsion occurs above the reflection of the tunica vaginalis. Campbell [2] has pointed out that this results from the extreme mobility of the scrotal contents during infancy. Donovan,[3] studying 163 reported cases, found 13 patients who were infants less than a year old; the youngest was 4 hours old. Torsion of the spermatic cord occurs oftenest in young men and is the result either of anomalous attachments of the testis and epididymis within their serous investments in the scrotum or of anomalous attachments associated with incomplete descent of the testes. The ages of our patients ranged from 9 to 29 years, and the average age was 18.5 years. O'Conor [4] reported an average age of 14 years, and Abeshouse,[5] an average of 17.7 years among 153 collected reports. The oldest patient was 68.

Among the 13 of our patients who had operations, 12 had scrotal testes that were the site of intravaginal torsion due to anomalous attachments. These were variable in character, but the one most commonly found was high investment of the tunica vaginalis about the spermatic cord with absence of the mesorchium and the gubernaculum (see figure). This has been termed the bell clapper deformity or intratunicary pedicle by Hamilton, Peyton, and Mantell.[6] It is characteristically bilateral and was found so in each of our three patients who underwent contralateral scrotal exploration. The bilateral nature of the anomaly is further supported by the comparatively high incidence of bilateral torsion, reported in 27 of 350 cases collected by Moulder [7] and in 5 of 153 by Abeshouse.[5] We have found only one case, reported by Ferguson,[8] in which torsion of the testis occurred upon the epididymis rather than in the cord.

Delasiauve's [1] original case of torsion was in an imperfectly descended organ. It appears, from survey of the literature, that about half of the recorded cases have been in incompletely descended testes. Incomplete descent was found in 75 of the 127 cases collected from the literature by O'Conor,[4] 90 of 150 by Wallenstein,[9] and 69 of 153 by Abeshouse.[5] In Wallenstein's report, 4 of the 90 incompletely descended testes contained malignant tumors, and in Abeshouse's group of 69 comparable cases, 5 contained malignant tumors. In Abeshouse's study, there were 84 cases of torsion within scrotal testes, 3 of which were found to contain malignant lesions.



Left scrotal contents of a patient who had previously lost the right testis as the result of torsion. Operation on the left side was done as a prophylactic measure and revealed high investment of the tunica vaginalis about the spermatic cord, with absence of the mesorchium and the gubernaculum.

Torsion occurred on the right side in six of our patients and on the left in seven. This approximately equal distribution has been noted by other observers.[10] In our cases, as in others reported previously,[4] there was no consistent tendency for rotation to occur in a clockwise or counterclockwise direction.

Dr. Louis R. M. Del Guercio prepared the illustration, and Dr. Muriel V. Hayward made translations for this article.

From the departments of urology, Yale University School of Medicine and New Haven Hospital. Dr. Clarke is now at the Pratt Diagnostic Clinic, New England Center Hospital, Boston.

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DIAGNOSIS

The commonest conditions from which torsion of the spermatic cord must be distinguished are strangulated hernia, traumatic orchitis or hematocele, acute epididymitis, acute orchitis, and torsion of the appendix testis. If diagnosis is in doubt, postponement of operative exploration is seldom justified.

Testicular pain began abruptly in all of our patients. It was not preceded by injury in any of our cases and occurred during sleep in five. Several patients reported radiation of pain to the groin or lower abdomen. Five patients had vomited. Fever was low to absent; an acceleration of pulse rate was seldom present; and a slight degree of leukocytosis was usually found, with slight increase in the proportion of polymorphonuclear forms; however, these symptoms were not present so consistently as to be differential diagnostic points. In no patients were significant abnormalities elicited by urinalysis or prostatic palpation.

Tenderness of the scrotal contents on the affected side and an indurated scrotal mass occurred in every patient, whether or not ischemic changes in the organs were found to be irreversible at operation. In two patients a rotated epididymis could be felt before operation. In five patients the scrotal contents were retracted upward by the torsion and by cremasteric spasm. Prehn [11] has pointed out that, in epididymitis, elevation of the affected side of the scrotum will alleviate pain, but in torsion the same test will accentuate pain. The test was made on five of our patients and was positive in all five, as it was in all of Peck's [12] six cases.

COURSE AND TREATMENT

Torsion of the spermatic cord must be recognized as a surgical emergency. Even though spontaneous or nonoperative reduction sometimes occurs, irreversible ischemic changes are usual within a few hours. Hemorrhagic necrosis develops quickly and gradually evolves to atrophy and fibrosis. In one of our patients nine hours elapsed between onset of the pain and operative reduction of torsion. This is the longest recorded interval after which the testis was proved, by repeated observation, to have survived after surgery. In another of our patients, operation was done at the same interval, but gangrene was found. We believe that survival of the testis is unlikely if more than four hours have elapsed between torsion and reduction. Keyes, Collings, and Campbell [13] showed, in experiments on dogs, that necrosis was apparent in less than 48 hours and atrophy within 3 weeks.

At operation, we prefer a low scrotal incision. If apparently normal circulation returns within a reasonable period after the scrotal coats and tunica vaginalis have been opened and the torsion reduced, the parietal layer of the tunica vaginalis is excised as in operation for hydrocele and the testis is anchored to the scrotal wall by sutures to each of its lateral surfaces. In no case in which this was done did atrophy ensue, and Wheeler and Clark [14] have shown that spermatogenesis is unimpaired by this procedure. In most cases, a similar fixation operation should be carried out prophylactically, immediately or later, on the other testis.

SUMMARY

Torsion of the spermatic cord is a surgical emergency requiring immediate operative reduction and fixation of the testis within the scrotum. It occurs in incompletely descended testes or those with anomalous attachments within the tunica vaginalis and, in the latter, is usually bilateral. The acute episode is characterized by abrupt onset of pain, seldom with a history of injury, and must be distinguished from strangulated hernia, traumatic orchitis, acute epididymitis, acute orchitis, and torsion of the appendix testis. If the diagnosis is in doubt, postponement of operative exploration is seldom justified.

789 Howard Ave. (Dr. Deming).

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SPECIAL ARTICLE

PRIMER ON THE RHEUMATIC DISEASES

Prepared by a Committee of the American Rheumatism Association

Following is the third and last part of the revision of the Primer on the Rheumatic Diseases. The first two parts appeared in THE JOURNAL *May 23 and May 30.*—ED.

DEGENERATIVE JOINT DISEASE

Although this common articular disorder has been variously named osteoarthritis, hypertrophic arthritis, senescent arthritis, and arthritis deformans, the term degenerative joint disease is preferred.

Etiology.—The cause of degenerative joint disease is unknown. Extensive studies of postmortem material indicate that degenerative changes in the cartilage are the earliest anatomic abnormalities and that there is good correlation between the severity of such changes and advancing age. Deterioration of cartilage in the knee joint may be demonstrated in some persons toward the end of the second decade of life and is present in 80 to 90% of persons over 60 years of age. Increased wear and tear through weight-bearing and excessive or abnormal use of a joint is known to accelerate and enhance the tendency to degenerative changes. Contributory factors include occupational stresses, obesity, and poor posture. Articular degenerative phenomena are also increased by a wide variety of functional and anatomic derangements of the joints resulting from congenital defects, developmental disturbances, osteochondritis, trauma, infection, and neuromuscular disease. There is evidence that factors other than aging processes and attrition influence the development and course of degenerative joint disease.

The Committee of the American Rheumatism Association consists of Dr. Charles Ragan, New York, Chairman; Dr. Harry A. Feldman, Syracuse, Dr. William S. Clark, Cleveland, Drs. Edward E. Fischel, Edward Lowman, Currier McEwen, and Morris Ziff, New York, and Drs. Joseph L. Hollander and Ralph A. Jessar, Philadelphia.

Heberden's nodes, usually considered a manifestation of this form of arthopathy, are of particular interest in this regard, although their relationship to degenerative changes in other joints has been questioned. Statistical studies have established a higher incidence of Heberden's nodes in women and the presence in some families of a sex-influenced hereditary disposition for their development. A clear-cut relationship between endocrine factors and degenerative joint disease has not been established. Focal infection is not a causative factor. Vascular disturbances, arteriosclerosis, and urate deposits have not been encountered oftener than might be expected in an unselected group of persons of the same age.

Pathology.—The earliest observed pathological signs of this form of rheumatism are invariably small pits and irregularities of the articular surfaces. These are defects in the hyaline cement substance of cartilage that permit the structural fibrils of the normally homogeneous matrix to become apparent (fibrillation). Subsequently, the ulcerations extend toward the borders of the cartilage and more deeply into it. The cartilaginous surface may show wide erosions and splits, which penetrate to the epiphysial bone. Cell clusters, and occasionally macroscopic fragments of cartilage, are separated and dislodged into the articular space. Several reactive phenomena can be observed in other components of the joint secondary to this process. Even with early lesions there is active growth of primitive cells at the periphery where cartilage and synovial intima blend into a zone of transitional tissue. Metaplasia to cartilage and bone frequently occurs at this site. Marginal proliferations may also arise at the juncture of periosteum and fibrous synovial capsule and from subchondral bone. In any case, this development of so-called bony spurs, lipping, or osteophytes represents a fairly advanced phase of degenerative joint disease. As the breakdown of cartilaginous matrix begins, the calcified lamella separating cartilage from subchrondral bone tends to become thicker and dense and may even be reduplicated. In examples of severe destruction of cartilage, the epiphysial marrow sometimes showns signs of irritation in increased vascularity and growth of endosteal cells and marrow fibrocytes. This granulation tissue may break through the calcified lamella to invade foci of degeneration in the cartilage. Detritus cysts are not infrequently encountered and may give rise to translucent defects in the subchondral area on roentgen examination. The ultimate stage of the disease is characterized by complete loss of hyaline cartilage from the articular surfaces and its replacement with sclerosed, eburnated bone. True ankyloses do not occur, although calcification and osseous bridges are found in some joints, the coverings of which are made up in part or altogether of fibrocartilage (for example, the sacroiliac and acromioclavicular joints), and in interspinous ligaments leading to variable degrees of rigidity of the vertebral column. Alterations in the synovial membrane are not striking and consist mainly of increased density of subintimal tissue and rare small foci of inflammatory cells.

Clinical Features.—Degenerative joint disease may be asymptomatic, even in the presence of extensive articular damage. The earliest symptoms usually are insidious, mild stiffness and aching pain in or about the affected joint. Elevation of temperature, leukocytosis, malaise, loss of weight, cachexia, or other constitutional manifestations are absent. Physical signs depend on the joint involved. In the terminal phalangeal joints of the fingers, tender fluctuant swelling may suddenly appear that may be mistaken for infection. Deformities and bony enlargement of these joints develop insidiously, and pain and tenderness may continue in varying degrees or subside completely. Similar manifestations may occasionally appear in the proximal interphalangeal joints but rarely, if ever, in the metacarpophalangeal joints. The wrists, elbows, and shoulders rarely have symptomatic involvement, and, when present, this is usually associated with occupational stresses or mechanical derangements.

Pain is more frequent in joints subject to strain, such as the lower spine, hips, and knees. Extensive degenerative changes may be present in these joints without symptoms, and the nature and severity of discomfort relates to physical activity and the degree of mechanical derangement. The pain of degenerative joint disease characteristically improves with rest.

Physical signs in joints accessible to palpation are minimal soft tissue thickening, crepitus, and changes in the size and shape of the bones. Occasionally effusions are noted in the knees. The only physical signs in joints not accessible to palpation and inspection, such as the hip and spine, are loss of motion and pain on extremes of motion. Except for Heberden's nodes, local evidence of inflammation is absent except after trauma or excessive use of the involved joints.

Laboratory and Roentgenologic Observations. — Degenerative joint disease has no characteristic laboratory manifestations. The sedimentation rate may be moderately elevated but is usually normal. Synovial fluid, when present in sufficient quantity for aspiration, has few abnormalities. The total white blood cell count and percentage of polymorphonuclear leukocytes are low.[4a]

Roentgenograms reveal narrowing of the joint space, with condensation of bone in the region of the articular cortex and irregular new growths of bone at the articular margins (osteophytes, spurs, and lipping). Discrete subchondral rarefactions (cysts) may be present that sometimes resemble those of gouty arthritis. Bone atrophy is unusual and suggests an associated disease.

Diagnosis.—Degenerative joint disease can as a rule be readily distinguished from inflammatory and infectious arthritides by the lack of constitutional manifestations and by the absence of synovitis. Muscle atrophy is usually absent. In distinction to the various types of arthritis, the course of this disorder is slowly progressive over years and decades and not characterized by exacerbations and remissions; however, more or less acute episodes may follow excessive use or trauma of the involved joints.

Detection of early stages of degenerative joint change is difficult by clinical examination. The presence of articular discomfort in the absence of clear-cut degenerative changes in the joint creates a difficult problem in differential diagnosis. In such instances other causes of skeletal discomfort must be carefully excluded. Intermittently progressive articular aching relieved by rest and with minimal physical signs of joint disease in a

4*a*. Ropes, M. W., and Bauer, W.: Synovial Fluid Changes in Joint Disease, New York, the Commonwealth Fund, 1953.

middle-aged person without evidence of general illness should lead one to consider this diagnosis. The appearance of advanced degenerative joint disease, however, is distinctive, especially when it affects the smaller finger joints, with firm or hard, knobby enlargement leading eventually to deformities and a somewhat limited range of motion. One must be cautious in attributing skeletal symptoms to degenerative changes in the joints, particularly in the spine, to avoid misdiagnosis of superimposed disease such as metastatic malignancy, osteoporosis, and intercurrent infections. It is important to remember that the sudden onset of symptoms in previously asymptomatic joints requires an explanation. Mention must be made of the frequency with which degenerative lesions of the spine produce symptoms in remote areas, often without local pain. The phenomenon of referred pain from the spine is generally recognized.

As has been said, degenerative joint disease and rheumatoid arthritis are dissimilar and should not be confused. Since the onset of rheumatoid arthritis sometimes occurs in later decades when degenerative changes are common, the two diseases may coexist. Sometimes when degenerative joint disease involves not only the terminal interphalangeal joints of the fingers (Heberden's nodes) but also the proximal ones, the deformity of the latter may stimulate somewhat the fusiform swelling of these joints in rheumatoid arthritis. The hard, knobby character of the enlargement in degenerative joint disease makes the nature of this process clear.

Treatment.—No specific therapy is known. Therefore, this form of rheumatism must be managed by the control of symptoms and the relief of strains on the affected articulations. Except for degenerative hip disease (malum coxae senilis), which often ends in severe disability, and except for a small number of patients with an apparently marked constitutional predisposition, clinical results with this approach will be gratifying.

Reassurance.—It is essential to give the patient, who frequently harbors grave fears of becoming a hopeless cripple, the proper perspective of his fundamentally benign disorder, and it is neither wise nor correct to state or imply that nothing can be done for him and that he need not return. In some patients, coexistent neurotic conflicts and the attendant muscle tension appear to aggravate disability from degenerative joint disease. In such cases the resolution of emotional problems and the attainment of relaxation may produce striking benefit.

Rest. — The most rational therapeutic measures are those providing rest for the affected part. The means to insure this should be applied to the individual joint, with a view to its peculiar stresses in weight bearing and motion. In the case of a peripheral articulation of the upper extremity, simple splinting is usually sufficient. In joints of the lower part of the spine, legs and feet, additional measures to relieve strain and weight bearing may be necessary. Support to various parts may be provided by strapping, belts, braces, or the use of canes or crutches. For more severe degenerative disease of the hips and lower part of the spine, rest in recumbency with or without traction may be required.

Physical Therapy.—Physiatric measures are valuable in the correction of malpostures that act as contributory factors and in the treatment of degenerative joint disease. During especially painful phases, such measures should be confined to applications of heat in a simple form, preferably hot soaks, hot towel packs or infrared light, accompanied by stroking massage of the periarticular tissues and muscles. After a few days, when the lesion has become quiescent, passive motion should be added before a gradual return to active exercises and normal function. Roentgen therapy has been advocated for the relief of pain, but its benefit is unproved and its use for this purpose in degenerative joint disease unjustified when satisfactory relief can be obtained by safer means.

Diet.—The food intake should follow a normal pattern unless caloric restrictions are advisable. Since obesity is a common aggravating circumstance, weight reduction is frequently indicated to relieve abnormal strains on the joints of the lower part of the spine and the legs.

Drugs.—Relief from pain and muscle spasm in this disease is usually afforded by the salicylates, for instance, acetylsalicylic acid in doses of 0.6 to 0.9 gm. three to five times daily. Phenylbutazone is occasionally used, but its toxicity as described above makes justification of its use in this disease doubtful. The simultaneous administration of a mild sedative such as phenobarbital may be helpful in patients with significant nervous tension. Sex hormones have not been found effective in combating this disorder. Cortisone and corticotropin relieve symptoms in some patients but are not sufficiently effective to justify their routine use. The intra-articular administration of hydrocortisone in doses of 25 to 50 mg. affords temporary local amelioration of symptoms in most patients and can be a useful adjunct in the management of excessively painful joints. Other glandular elements or vitamins should be given only when a definite deficiency can be demonstrated.

Surgery.—While the procedures outlined above may ordinarily be relied on to control symptoms and disability from degenerative joint disease, arthroplasty may sometimes be desirable or necessary in badly deformed joints. Such a procedure is aimed at correcting mechanical disturbances and thereby improving motion and controlling pain. Débridement of joints, such as the knee, is occasionally resorted to for removal of hypertrophic bone and smoothing off of the articular surfaces. Hip surgery in malum coxae senilis, a common form of degenerative joint disease, has been more successful than surgery to other joints and may be the only satisfactory approach to this particular problem. At present two procedures are employed. A vitallium cup is inserted in either the acetabulum or the head, and varying portions of the neck and even the shaft are replaced by an acrylic or metal prosthesis. Both procedures have been advocated by some orthopedic surgeons and criticized by others. Success of either method obviously depends on the skill with which it is performed and the proper selection of cases.

GOUT

Gout is a metabolic disease of unknown causation characterized by (1) acute attacks of arthritis with freedom from joint symptoms between attacks except in a minority of patients in whom chronic deforming changes develop; (2) increased concentration of uric acid in

serum and body fluids; (3) eventual deposition of sodium urate crystals in articular, periarticular, and subcutaneous tissues, bone, and sometimes also in the urinary tract; and (4) degenerative changes, particularly in the vessels of the kidneys in many patients who have had the disease for years. The disease may limit itself to acute attacks of arthritis that resolve completely (acute gouty arthritis) or it may progress over a period of years to a stage in which numerous deposits of sodium urate crystals (tophi) are present (chronic tophaceous gout).

Gout is distributed diffusely among races, nationalities, and social levels. More than 90% of patients with overt gout are males, usually more than 30 years of age. When the disease occurs in females, it does so most commonly after the menopause. Though the trait of hyperuricemia is believed to be inherited through a single autosomal dominant gene, recognized gouty arthritis develops in only a portion of the bearers of the gouty trait.

In more than 95% of patients with gout the serum uric acid level is above normal; in patients with chronic gout there is a trend toward increase in the miscible pool of uric acid in the tissues. The reason for this increase is not definitely known, but recent indications are that in some instances it is due primarily to an increased rate of synthesis of urate. Later, renal damage, which commonly supervenes, leads to retention of urate and further increase in the size of the pool.

Dietary purines are important precursors of uric acid, but a considerable portion of the urate formed in the body arises by endogenous synthesis from simple and abundant nitrogen and carbon metabolites, important among these being the amino acid glycine. In general, the amount of uric acid formed in the body depends on the rate of formation of the purines from their precursors, the availability of the precursors, and the amount of direct oxidation of the formed purines both from dietary and endogenous sources.

Many factors may provoke an acute attack of gouty arthritis in persons who are afflicted with the underlying metabolic disturbance. These include trauma, surgical operations, systemic infections, emotional stress, excessive intake of nitrogenous foods or alcohol, liver extract, thiamine, high fat diet, and mercurial diuretics.

CLINICAL FEATURES OF ACUTE GOUTY ARTHRITIS

Some patients are not aware of any prodromes of an acute attack; others notice one or more nonspecific symptoms. The first articular symptoms may occur at any hour of the day or night. Within a few hours the affected joint or joints usually become red, warm, swollen, and exquisitely tender to touch and acutely painful when moved. Weight bearing is impossible in the severer attacks that affect the lower extremities. A moderate elevation of temperature, leukocytosis, and an increased sedimentation rate may be present. The metatarsophalangeal joint of the great toe is affected in about 50% of the patients, but other joints of the feet, ankles, knees, hands, wrists, or elbows may be involved. The arthritis may be monarticular or migratory and polyarticular. Joint effusion or acute bursitis not uncommonly is associated with the synovitis. If the attack is not treated specifically, severe symptoms may last for several days or weeks; if proper treatment is instituted, symptoms usually subside rapidly. After the acute attack, the joint is essentially unchanged from its condition prior to the attack in most instances.

A first attack of acute arthritis, whether monarticular or polyarticular, occurring in a man past the age of 35 should strongly suggest that gout be considered in the differential diagnosis. A family history of gout may point the way to the correct diagnosis. Recurring attacks of acute joint pain, with completely asymptomatic intervals, are infrequent in adults except in gout.

LABORATORY FINDINGS

An increase in the content of urates in serum is a characteristic finding in gout. The level in the serum usually is above 6 mg. per 100 cc. in males (5.5 mg. per 100 cc. in females). Some laboratories have considerable difficulty with uric acid determinations, and in such instances a diagnosis of gout may be made in certain patients irrespective of the uric acid level. There is no essential difference in the uric acid level during symptomatic and asymptomatic periods. Other conditions that may be associated with an increase in serum uric acid include renal insufficiency, polycythemia vera, leukemia, multiple myeloma, pernicious anemia, and certain infections.

Tophi containing sodium urate crystals are found only in gout. They occur oftenest about the margin of the ears and in the feet and less often around the joints of the hands in the olecranon and prepatellar bursae. If a tophus is suspected, its contents should be removed and examined microscopically for needle-like crystals or chemically by means of the murexide test.

ROENTGENOLOGIC EXAMINATION

During the earlier stages of the disease, the joints may appear normal on roentgenographic examination. As attacks recur, tophi are observed as soft tissue swellings around affected joints and punched-out areas in the bones of the fingers and toes especially.

THERAPEUTIC TEST

Colchicine, if given promptly and in sufficient dosage, will usually relieve the acute manifestations of gouty arthritis in a remarkable manner. Other forms of arthritis are unaffected by colchicine.

TREATMENT

Acute Gouty Arthritis.—Acetylsalicylic acid, 4 to 6 gm. (60 to 90 grains), may be prescribed daily during the acute attack. There should be a liberal intake of fluids. A cradle support is advisable for the lower extremities. Moist warm compresses are helpful, though cold compresses are better tolerated by some patients.

Colchicine: Colchicine is specific for acute attacks. Two 0.5 mg. tablets (1/120 grain each) should be taken every two hours until the joint symptoms are relieved or gastrointestinal symptoms (nausea, vomiting, or diarrhea) appear. When gastrointestinal symptoms develop, tincture of camphorated opium, 5 cc. (1 dram), should be given as needed. From 6.0 to 10.0 mg. of colchicine are usually required to produce toxicity. Some patients may need a second course of colchicine, especially if the first was not started promptly; 48 hours should elapse between the first and second courses. Following sub-

sidence of symptoms, patients who have more than one attack yearly may be placed on maintenance colchicine therapy for prophylaxis, the usual required dose being one or two 0.5 mg. tablets daily. Colchicine in small doses has been successfully used by intravenous injection.

Corticotropin: Corticotropin is effective in rapidly terminating most acute attacks. It is especially useful in severe attacks and in attacks treated late in their course. Either aqueous corticotropin (injected intramuscularly every six hours) or long-acting corticotropin (injected every 12 or 24 hours) may be administered, the usual total daily dose being 100 to 150 mg. When the attack is relieved, the dosage should be tapered off over a three or four day period. A dose of 100 mg. is usually sufficient to produce marked relief. To avoid relapse, colchicine should be administered simultaneously in a dosage of 0.5 mg. (1/120 grain) four times daily; colchicine therapy should be continued after corticotropin therapy is stopped. If gastrointestinal symptoms occur administration of colchicine should be discontinued for 24 hours or until the diarrhea is over and resumed in gradually smaller doses over a period of two weeks until maintenance levels are reached.

Cortisone: Cortisone may be administered orally in a dosage of 50 mg. four times daily for two days, followed by 25 mg. four times daily for five days; the dosage may then be tapered off over a four day period. Cortisone is often ineffective at this dosage level, however, and the use of corticotropin is recommended. Colchicine should be administered simultaneously as outlined in the paragraph on corticotropin.

Phenylbutazone: Phenylbutazone often produces dramatic relief of symptoms in acute gout within 48 hours or less. This is accompanied by a fall in the serum uric acid level. One 200 mg. tablet may be given four times daily with food until the attack subsides, and maintenance colchicine therapy may then be instituted. The limiting factor in the use of phenylbutazone is its toxicity, which has been discussed in the section on rheumatoid arthritis. Though vigilance is essential, the hazards of this drug have not so far appeared to be important in the short-term therapy of acute gout; they may, however, subsequently be observed following repeated short courses of therapy.

Intra-Articular Therapy: Hydrocortisone acetate may be injected locally into involved joints in a dose of 50 mg. It is helpful in the treatment of both acutely and chronically affected joints.

Chronic Tophaceous Gout. — The development of joint disabilities due to chronic tophaceous gout may be retarded or prevented by protracted use of suitable uricosuric agents. Probenecid (Benemid) produces an increase in excretion of urate ranging from 35 to 200% when given orally in a dosage of 1 gm. twice daily, and this uricosuric effect often can be maintained over an extended period. There is a prompt fall in the serum uric acid level to or toward the normal. A large fluid intake and 4 gm. of sodium bicarbonate daily are recommended during probenecid administration. Caution should be exercised in the further use of probenecid if urate calculi are present. Large doses of salicylates interfere with the action of probenecid and should be avoided. Acute attacks of arthritis may be precipitated shortly after initiation of probenecid therapy, but they ultimately diminish in frequency with continued treatment. As a result of the administration of probenecid, the formation of tophi may be avoided; established tophi do not increase in size and may become smaller or disappear. Joint disability appears to be diminished.

GENERAL MEASURES

There is no convincing evidence that restriction of purine, protein, fat, or alcohol intake reduces the incidence of gouty attacks. It is known, however, that less uric acid is excreted in the urine when the purine intake is low, and it is reasonable to suppose that less uric acid is retained in the body on a low purine diet, particularly when renal function is impaired. Endogenous synthesis, however, makes complete control of uric acid formation impossible by dietary regulation.

The diet in patients with nontophaceous gout should be balanced in regard to protein, carbohydrates and fat. Substances high in purines, such as liver, kidney, brains, sweetbreads, anchovies, and sardines, should be avoided. Other foods that contain appreciable quantities of purine bodies and should be eaten sparingly include bacon, beef, tongue, codfish, duck, goose, game birds, halibut, lamb, meat soups, perch, pike, rabbit, shellfish, squab, trout, turkey, veal, and venison. In patients with tophaceous gout, an excessive protein intake as well as purine intake should be avoided, since glycine is known to be a precursor of uric acid. Supplementary vitamins and minerals are of no value in the absence of a specific deficiency. Abundant fluids should be taken to aid in the excretion of uric acid. Excessive amounts of alcohol should be avoided much as any other undesirable stress; in moderate amounts alcohol should be restricted only in patients in whom it is definitely known to incite acute attacks. Salicylates in analgesic doses, 1 to 3 gm. daily (15 to 45 grains), may cause retention of uric acid in gout. With uricosuric dosage, over 4 gm. daily (60 grains), toxicity frequently occurs.

Absolute bed rest is indicated in acute attacks, but exercise should not be restricted in the chronic stage, provided it does not put undue strain on an involved joint. Surgical intervention is now rarely indicated for removal of subcutaneous tophi and for other corrective measures. Physiotherapy and rehabilitation play as helpful a part in the treatment of chronic gout as they do in the other rheumatic diseases. Diathermy, however, is not tolerated well, as a rule.

NONARTICULAR RHEUMATISM

Probably the commonest form of rheumatic disease, also the mildest, is a heterogeneous group of conditions producing pain and stiffness in connective tissue structures but not particularly involving the joints. Relatively few persons go through life without at least one attack of painful stiff neck, lumbago, bursitis, or simply stiff muscles or "myalgia." Because such conditions are usually mild and often of short duration, the victim usually ascribes such attacks to some overexertion, minor trauma, chilling, or a "cold," and treats himself with home remedies. The physician sees only the relatively small proportion of cases in which the severity or persistence of the pain and stiffness has induced the victim

to seek help. Even so, about 30% of patients in arthritis clinics in the United States suffer from nonarticular rheumatism, and in Great Britain the proportion is even higher.

Consideration of these disorders as a group is for convenience only, since the cause is varied or completely unknown, and many of the forms are poorly defined, both clinically and pathologically. Indeed, even the terminology for the clinical types has been varied and confusing. Excluded from the following list of types of nonarticular rheumatism is so-called "secondary fibrositis," in which more or less generalized soreness and muscle stiffness occur either as symptoms of a specific febrile illness or in association with a distinct form of arthritis. The important types of primary nonarticular rheumatism are as follows:

Fibrositis, generalized
Fibrositis, localized
- Intramuscular fibrositis (muscular rheumatism), e. g., painful stiff neck, lumbago
- Bursitis
- Periarticular fibrositis (periarthritis, para-arthritis)
- Tendonitis (tendon attachment syndrome)
- Tenosynovitis
- Perineural fibrositis (primary neuralgia)
- Fasciitis
- Panniculitis

Shoulder-hand syndrome (causalgia, reflex sympathetic dystrophy)
Psychogenic rheumatism (rheumatic manifestations of psychoneurosis)

FIBROSITIS, GENERALIZED

There is a clinically distinct symptom complex of rheumatism that affects primarily the nonarticular fibrous tissue, called variously fibrositis, myofibrositis, muscular rheumatism, or myositis. None of these terms is entirely suitable; fibrositis is in general usage. It is open to the objection that there has been no substantiation that this is truly an inflammation as the suffix implies.

Primary fibrositis may be rather generalized or sharply localized. The more disseminated form of the disorder involves the fascia, tendons, and aponeuroses, particularly in the back, shoulders, thighs, and hands, although any other fibrous tissue structure may be prominently affected. Localized forms of fibrositis, such as bursitis or tenosynovitis, are considered separately.

Etiology.—The cause is unknown. The same uncertainties surround the nature of this rheumatic disease as that of rheumatoid arthritis and other "collagen diseases." In some instances, acute infections, trauma, unusual physical activity, fatigue, and exposure to dampness and cold appear to be contributory causes. In the majority, however, even these factors cannot be incriminated, and the factor of nervous tension has been increasingly accepted by many students of the condition, thus making a clear-cut differentiation from psychogenic rheumatism very difficult.

Considerable speculation that fibrositis may be a manifestation of mild reversible chemical changes in the connective tissue of the same nature but of milder degree than is seen in the collagen diseases has appeared in recent years. Only further knowledge can settle this point. Possibly inherited tissue characteristics may predispose to fibrositis.

Pathological Features. — The pathological features have not been clearly defined. Histological studies have been reported variously to show exudation in the connective tissue, small infiltrations of round cells, tender fibrous tissue nodules, and mild degenerative changes in white fibrous tissue and muscles. No consistent changes are agreed on by various students of this disease. Many consider this illness not one of characteristic cellular inflammation but rather that the pathological changes are chiefly chemical or physiochemical disturbances that alter the physiology of the involved tissues. The fact that salicylate administration or the use of cortisone and corticotropin apparently suppresses the symptoms has added some weight to the view that true inflammation exists, but further study is necessary.

Clinical Features.—The clinical pattern of fibrositis is fairly consistent. Affected persons are usually young or middle-aged adults. The disorder may begin acutely with a severely painful stiff neck or pain in the lower back requiring bed rest. When so acute, the illness usually subsides within 7 to 14 days. Perhaps more commonly the onset is insidious. Aching and stiffness of the neck and shoulders, lower part of the back, or the entire back are common early symptoms. The posterior structures of the shoulder girdle, the interscapular region, and the upper portions of the thighs, especially about the femoral trochanters, are frequent sites of symptoms. Turning, stooping, and twisting motions of the spine, and rotation at the shoulders, and lying on the side are difficult to do and aggravate the symptoms. Often the hands become stiff; movement of the fingers is difficult and clumsy, and the grasp becomes weak so that objects are dropped and work with the hands becomes difficult or impossible.

Symptoms and dysfunction usually are worse after rest; therefore, they are maximal on arising. Exercise of the affected parts usually limbers and relieves the aching. Patients feel best after midday until evening, when stiffness and pain are usually worse. Stiffness resulting from rest and cool environment is often referred to a "jelling" of the muscles and fibrous tissue. Dampness, cold, rain, and snow usually worsen the symptoms; warmth, dryness, and the summer season normally relieve them.

Symptoms usually fluctuate and even disappear and recur. The illness may continue for long periods, but seldom is it sufficiently severe to incapacitate the patient; it is more of a "nuisance" disease. Systemic health is good, and fever, loss of weight, and muscle atrophy do not occur. The joints do not show changes. Stiffness limits motions, and the affected parts may be tender. Almond-sized, tender nodules are sometimes felt in the lumbosacral region.

Laboratory Observations.—Results of laboratory tests are usually normal. There is no anemia or leukocytosis; the erythrocyte sedimentation rate is normal or only slightly elevated. Roentgenograms do not show changes in cartilages or bones.

Diagnosis.—The diagnosis is based on the characteristic clinical history, absence of pathological joint changes, normal general health, and negative laboratory findings. Differentiation from early rheumatoid arthritis, mild osteoarthritis, especially of the spine, and psychogenic rheumatism is the chief diagnostic problem. Often the

possibility of early rheumatoid arthritis or degenerative joint disease can be excluded only after careful observation of the patient for some time.

Prognosis.—The outlook is relatively good. Crippling and deformities never result. The disease usually subsides or is controlled by treatment, although there are some stubborn cases. Patients should be informed that they have only a "nuisance" illness rather than a crippling disease, for they usually fear that they have arthritis and are greatly relieved to learn that their disease is relatively mild.

Treatment.—Treatment of fibrositis is supportive and symptomatic. A middle course concerning restriction of activity and additional daytime rest is advocated. Heat, in the form of hot packs, often relieves; massage is usually helpful, and planned exercise done after application of heat may relieve stiffness and aching. Salicylates are useful for analgesia. Procaine injected into "trigger points" of pain may break the reflex and afford relief for varying lengths of time. Adjustment of the home situation or business difficulties may exert an ameliorating effect on the symptoms. Most observers agree that cortisone or corticotropin therapy is seldom, if ever, justifiable in fibrositis.

LOCAL AND SPECIAL FORMS OF FIBROSITIS

Fibrous tissue irritation or inflammation may be rather localized. Symptoms and disorders of function depend on the anatomic localization. Good examples are the acute, painful stiff neck and "lumbago." Each of these painful conditions depends on irritation of the muscle sheaths, fascia, tendons, and ligaments in the back. Muscle spasm is often severe. Hot fomentations and injections of procaine into the center of the irritation are apt to effect prompt relief. Antispasmodic drugs have some value in this form of fibrositis with acute muscle spasm.

Bursitis and Tendonitis.—Inflammation of a bursa is a common form of localized fibrositis. It may be caused by trauma, unusual use of the part, or infection, or the cause may be unknown. Any bursa about joints may be inflamed. Commonly affected are the subacromial, olecranon, ischial, prepatellar, and Achilles bursae. One of the most difficult problems is fibrositis about the shoulder, which is much more frequent than arthritis of the shoulder joints and often begins with subacromial bursitis. This may begin precipitously or insidiously and may be acute or chronic.

Acute Subacromial Bursitis: Acute subacromial bursitis is characterized by pain and tenderness that is usually localized to the subacromial region and made worse by allowing the arm to hang unsupported, by pressure over the tip of the shoulder, or by movement of the shoulder in abduction and rotation. Sometimes these motions are markedly restricted by severe pain. Fluid may accummulate in the bursal sac, causing additional pain from the distention. This fluid may contain calcium salt in semisolid consistency.

It is often difficult to determine whether subacromial bursitis or irritation of the supraspinatus tendon is responsible for symptoms because of the proximity of these two structures. Irritation of one may secondarily affect the other adjacent structure, so that both become a source of pain. Calcification in the tendon near its attachment is common, and sometimes this may rupture into the bursa. Abnormal bursal or tendinous calcium may be absorbed, or it may become firm and add to the irritation of adjacent structures.

The diagnosis is usually not difficult because of the distinct clinical pattern; it is often aided by roentgenographic evidence of soft tissue calcium deposits. The shoulder joints always appear normal in the roentgenograms.

Treatment has been varied, largely symptomatic, and empirical. The patient should be reassured that the condition is relatively mild and often self-limited. In acute bursal inflammation the application of heat is frequently aggravating, while the local application of an ice bag is more consistently helpful. The arm should be kept at rest until the acute stage has subsided, when graded exercises to restore normal function are begun. Analgesics, and occasionally even narcotics, are temporarily required for control of acute pain. Puncture of the bursa with an aspirating needle and withdrawal of exudate may afford prompt relief. Injection of procaine into or around the bursa or injection of 25 mg. of hydrocortisone suspension into the bursa may produce prompt and often lasting relief. Local roentgen therapy helps in some cases, especially in the subacute stage. Trial of these local measures is important in order to permit early mobilization of the shoulder for prevention of adhesions. In long-standing cases in which the calcification is firm and adhesions restrict motion, excision of the calcific mass and liberation of the shoulder may be required. Because of the self-limited nature of the process, the specific value of any therapy is open to question.

With proper care promptly provided, acute bursitis can usually be arrested or controlled. If it becomes chronic, periarticular fibrositis may result and enhance the shoulder disability. (Periarthritis at the shoulder may also begin without apparent initial bursitis.) If stiffness of the shoulder persists, muscles atrophy and motion becomes so limited that a "frozen shoulder" may result. Careful manipulation with the patient under anesthesia may be required to regain motion.

Bursitis in other locations presents similar problems, the anatomic localization accounting for the differences in the clinical picture and therapeutic considerations. Tendons may become inflamed, although oftener they are painful with evidence of inflammation, accounting for the symptoms complex known as "tendon attachment pain." This may result from trauma or from unusual use, with or without regional bursitis. This is a common difficulty at the attachment of the conjoined tendon onto the humeral epicondyle, where it is known as "tennis elbow." Treatment is similar to that for bursitis.

Tenosynovitis. — Tendon sheaths may become inflamed as a result of trauma, specific infection such as tuberculosis, or from unknown cause. Sometimes nodular or stenosing changes (de Quervain's disease) produce impeded and painful motion of the encased tendon. When such a condition affects the flexor tendon sheath of a finger, extension may not be possible after the finger is flexed and the condition known as "trigger finger" results. Warm baths, paraffin dips, and exercises may relieve milder cases. Where specific infection has been

excluded as the cause, injection of 10 to 15 mg. of hydrocortisone suspension into the tendon sheath has produced complete and often persistent relief in most instances in which this relatively innocuous method was attempted. In long-standing resistant cases, incision of the tendon sheath may be required to permit free motion.

Fasciitis and Panniculitis.—Palmar fasciitis may result in adhesions and contractures limiting extension of the fingers. Contracture of the flexor tendons of the fingers may also occur, especially in the third, fourth and fifth digits, producing Dupuytren's contracture. This condition is also found in conjunction with the shoulder-hand syndrome discussed later. Surgical excision of the contracted palmar fascia is usually necessary in advanced cases, but recently some earlier cases have responded to repeated local infiltration of the involved tissues with a suspension of hydrocortisone.

The subcutaneous fascia may become inflamed with or without the fat components of subcutaneous tissue. This may be nodular in character and occur over the abdomen, shoulders and thighs, giving rise to the painful syndrome usually called panniculitis.

Pain in the back, referred along the appropriate segmental nerve distribution, may simulate fibrositis and be caused by herniation of subcutaneous fat through a weak portion of the fascia or a small foramen, a condition recently described as "herniated fat." Local injection of procaine hydrochloride may give relief temporarily; excision may be needed for permanent relief.

Shoulder-Hand Syndrome.—The shoulder-hand syndrome is an interesting and incompletely understood form of nonarticular rheumatism that may follow myocardial infarction or painful intrathoracic lesions, vascular accidents, trauma, or other irritative lesions about the neck or upper extremity and sometimes without known cause. It is characterized by pain in the shoulder or hand, commonly in both parts; it may be unilateral or bilateral. Shoulder motion is limited by pain; the affected hand becomes edematous and painful so that it is held stiff. After weeks or months, atrophy of the shoulder and hand occurs and adhesions or contractures limit motion in the affected parts. Atrophy of bone with high grade osteoporosis usually appears in roentgenograms, which always show normal joint structure.

This syndrome is thought to be a reflex dystrophy. It needs to be differentiated from rheumatoid arthritis. Treatment with the usual measures of physical therapy and analgesics is often without benefit. Usually brachial plexus or superior cervical ganglion block with procaine hydrochloride is the most effective means of allaying pain, which should be accomplished effectively as soon as possible so that functional exercises can be effected to prevent stiffness.

Treatment with large daily doses of cortisone (200 to 300 mg.) or corticotropin (100 to 200 mg.) for periods of a few weeks has occasionally resulted in marked benefit, which may persist after hormone withdrawal in some cases. Severe or resistant cases of the shoulder-hand syndrome probably deserve at least a trial of such therapy, unless contraindicated by the underlying disease, since this condition often becomes quite progressive and disabling.

Psychogenic Rheumatism.—A common form of nonarticular rheumatism in civilian as well as military practice is psychogenic rheumatism, the rheumatic manifestations of a psychoneurosis. During World War II, it was the commonest form of rheumatism encountered in many hospitals and field areas. Psychoneurotic persons in emotional conflict caused by psychic trauma, fear, anxiety, apprehension, or sorrow may experience arthralgia, muscle and tendon aches, stiffness, interference with joint motion, and other rheumatic symptoms that resemble some forms of arthritis or fibrositis from which they must be differentiated. Recognition is usually not difficult when psychogenic rheumatism exists alone. Absence of joint changes on clinical and roentgenologic examination, normal laboratory observations, and good organic health are characteristic. Bizarre deformities not conforming to anatomic changes and recognition of other evidence of psychoneurosis are helpful diagnostic features. It is more difficult to differentiate psychogenic rheumatism from fibrositis. Aids are lack of consistent localization of symptoms; lack of benefit from analgesics, heat, and physical therapy; and failure to improve in a warm atmosphere and after mild exercise; all these measures are usually beneficial to patients with fibrositis. As mentioned above, evidence has been accumulating to indicate that a major contributing factor in the pathogenesis of fibrositis is emotional tension. Hence, the differentiation in many instances may be an academic one. Treatment should be directed to relieving the emotional conflict, rationalization of the problems, and correction of the psychoneurosis. Unless these objectives are realized, treatment will be disappointing.

MISCELLANEOUS FORMS OF ARTHRITIS

In addition to the preceding major types of arthritis that constitute the bulk of joint diseases, there is a small group that can be categorized only as miscellaneous because of the diversity of their causes. While the incidence of these is relatively low, the etiological scope is broad and their differential diagnosis accordingly important. The joint involvement in this group may manifest itself as arthralgia, as arthritis, or as arthropathy. It may occur primarily in one or in multiple joints or the joint manifestations may be secondary to a graver constitutional disease process. In the latter case, the underlying constitutional disease may be of much graver prognostic import to the patient than the joint involvement; recognition therefore of the primary process is of importance for proper direction of therapy.

Reiter's Disease.—Reiter's disease is a syndrome of urethritis, conjunctivitis, and arthritis that must be differentiated from gonococcic infection. Reportedly, it occurs only in males, and there is unsubstantiated evidence that the causative agent may be a pleuropneumonia-like (or "L") organism. Any of the three systems involved may present the major symptoms and progress to major sequelae. Usually, however, the urethritis is of a slight mucopurulent type and the conjunctivitis of a catarrhal type, with the joint disorder predominating as the disabling aspect of the triad; the patient thus presents himself with hot, tender, swollen monarticular or polyarticular arthritis of a nonmigratory nature. Constitutional symp-

toms usually are mild. Urethral smears and cultures are negative for specific micro-organisms except in those reported cases from which pleuropneumonia-like organisms have been cultured. The disease is self-limited after weeks or months but tends to recur. Permanent damage to joints is rare. Treatment with artificial or induced hyperthemia has been fairly successful therapy in the past. More recently, cortisone and corticotropin have been used, and good results reported. Whether this syndrome is a variant of rheumatoid arthritis or a separate entity is still reasonably in doubt and requires further clarification.

Palindromic Rheumatism.—This is considered by some to be a distinct entity, while others believe it to be a variant of rheumatoid arthritis. Its chief features are multiple afebrile attacks of acute or subacute arthritis or para-arthritis, with pain, swelling, redness, and disability occurring usually in only one joint at a time. The attacks come on suddenly, develop rapidly, and last hours to one or two days, and then disappear completely with the same rapidity as the onset. They recur at short or long irregularly spaced intervals. There is a minimal if any constitutional reaction, no abnormality in laboratory tests, and no functional, pathological, or roentgenologic residuals accrue even after years of the disease and hundreds of attacks. The cause is unknown, and treatment is symptomatic.

Intermittent Hydrarthrosis.—Intermittent hydrarthrosis is a chronic disorder of recurring effusions usually involving knees and accompanied by a minimum of local or constitutional symptoms. The effusions are periodic in pattern, usually occurring every 7 to 11 days. The cause is unknown. In some cases the effusions are prodromal to typical rheumatoid arthritis, while other cases have been reported in which the typical recurrent pattern was present for as long as 22 years. The condition is uncommon, and the diagnosis should be made with caution after observation and careful study to rule out other more frequent causes of effusion.

Neurogenic Arthropathy.—Any disease impairing sensation, particularly proprioceptive sensation, in joint structures predisposes the joint to traumatic damage; this may accrue to such an extent as to render the joint severely deformed. The Charcot joint of tabes dorsalis is the typical example of this. Other disease processes, however, such as syringomyelia, leprosy, transection of the spinal cord, diabetic neuropathy, and peripheral nerve injuries that also impair sensation may predispose to similar arthropathies.

New Growths.—The tissues in and about joints are subject to overgrowth as are tissues elsewhere in the body. Any of the tissue components may undergo tumor formation with benign or malignant lesions. Because of the diversity of joint tissues, new growths may include fibroma, giant cell tumor (pigmented villanodular synovitis), chondroma, hemangioma, xanthoma, or synovioma. While most such tumors are benign and mechanical impediments to joint function, others may be of a high degree of malignancy, as is the case with synoviomas, with rapid metastatic spread and a graver prognosis.

Aseptic Necrosis of Bone.—Restriction or interruption of arterial blood supply to bone may result in localized aseptic necrosis and resorption of the portion of bone supplied by the involved arteries. This may ensue from intravascular causes, such as an embolus, but more frequently is the consequence of an intra-articular fracture or a dislocation mechanically disrupting arterial flow. With resorption of the aseptic necrotic area of bone, irregularity in the contour of the articular surface may result. Such a joint then is mechanically faulty because of its irregular articular surfaces and is subject to further secondary degenerative changes with use. Juvenile osteochondritis, such as Legge-Calve-Perthes' disease, produces a change in contour of the joint surface similar to that which results from aseptic necrosis. Degenerative joint disease eventuates if full restoration of the contours of the intra-articular surface does not occur. These conditions differ from traumatic aseptic necrosis in that under favorable conditions restoration of normal articular contours can be expected.

Loose Bodies.—Loose bodies in the joint may result in sufficient irritation to produce degenerative joint disease. The loose bodies may result from osteochondromatosis, osteochondritis dessicans, loose fragments from intra-articular fracture, or fractured menisci, or may be other foreign bodies.

SECONDARY JOINT INVOLVEMENT

Secondary joint involvement may occur in association with many systemic diseases (table 3). The joint symptoms may occur as minor aspects of the systemic complex or as major manifestations with acute or chronic bone and joint changes. Only the principal ones of these can be mentioned here.

Acromegaly.—Acromegaly produces a severe degenerative type of joint disease affecting vertebrae in 60% of patients with the disease. The degenerative changes are of a specialized nature, differing pathologically from those seen in hypertrophic arthritis of the spine.

Ochronosis.—Ochronosis is a metabolic disorder resulting from the defective metabolism of homogentesic acid. There may be no joint symptoms but, in time, the deposition of the material in joint cartilages results in degenerative changes. The spine is a common site of involvement and presents a roentgenologic picture that in itself is diagnostic. Symptoms are usually chronic, and mild and symptomatic treatment generally suffices. Treatment with cortisone has been reported.

Pulmonary Osteoarthropathy.—Clubbing of fingers together with an ossifying periostitis constitutes the entity of pulmonary osteoarthropathy; when articular symptoms accompany it, an erroneous diagnosis of rheumatoid arthritis may be made. An intrathoracic pathological condition, particularly carcinoma of the lung, is thought to precipitate the condition, but the mode of production of the osteoarthropathy is still speculative. It has been reported with suppurative lung lesions, intrathoracic tumors, congenital cardiac lesions, postoperative myxedema, and progressive exophthalmus. Articular symptoms have been reported to subside after removal of pulmonary pathological lesions, although the periostitis persists.

Hemophilia.—Hemorrhage into the joint or subchondral bone as a result of trauma in patients with this blood dyscrasia produces degenerative changes of the

bone and cartilage. The degree of degeneration and disability is directly proportional to the severity and frequency of traumatic insults to the joint.

Menopause.—The menopause is often accompanied by arthralgia, but it does not cause a true arthritis.

Serum Sickness.—Delayed allergic reactions to serum or drugs (especially the sulfonamides and penicillin) may occur 7 to 14 days after their administration. Such reactions may involve joints, and this together with the other systemic symptoms may mimic rheumatic fever. Joints may be tender and swollen, but the process is self-limited and leaves no residual joint damage.

Purpura.—Whether primary or secondary in etiology, purpura may produce arthralgia as the result of small intra-articular hemorrhages. Effusion may occur. Diagnosis and treatment depend on recognition of the blood defect and assessment of its cause.

Dr. William H. Kammerer, 33 E. 61st St., New York, Secretary of the American Rheumatism Association.

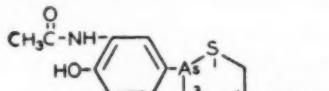
COUNCIL ON PHARMACY AND CHEMISTRY

NEW AND NONOFFICIAL REMEDIES

The following additional article has been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

R. T. STORMONT, M.D., *Secretary.*

Arsthinol.—Balarsen (Endo).—$C_{11}H_{14}AsNO_3S_2$.—M.W. 347.27.—Cyclic 3-hydroxypropylene ester of 3-acetamido-4-hydroxydithiobenzenearsonous acid.—2-(3′-Acetamido-4′-hydroxyphenyl)-1,3-dithia-2-arsacyclopentane-4-methanol.—The structural formula of arsthinol may be represented as follows:



Actions and Uses.—Arsthinol is a trivalent arsenical with indications somewhat similar to the pentavalent arsenicals previously available for oral use. Pentavalent arsenicals presumably are reduced to trivalent compounds in the body, and act in the latter form.

Arsthinol, when administered by mouth, has been demonstrated to be effective against intestinal amebiasis and yaws. There is no adequate evidence that the substance is effective against nonintestinal amebiasis, but it may be of value against other intestinal protozoa. However, the latter claims require further substantiation.

Dosage.—Arsthinol should be given in courses lasting five days. The daily oral dose is 10 mg. per kilogram of body weight, with a maximum of 500 mg. in 24 hours. Ordinarily the entire daily dose is taken following breakfast.

Tests and Standards.—

Physical Properties: Arsthinol is a white, odorless, microcrystalline powder, m.p. 163-166°. It is very slightly soluble in ether and water. The amount that dissolves in alcohol to form 100 ml. of solution is 2.7 gm.

Identity Tests: Dissolve about 0.1 gm. of arsthinol in 5 ml. of sodium hydroxide T.S. Dilute with 5 ml. of water, add 0.2 gm. of sodium hydrosulfite, and heat on a water bath for 20 min.: a yellow precipitate forms slowly which is soluble in an excess of sodium hydroxide T.S. *(presence of organic arsenic).*

Add 2 drops of freshly prepared ferric chloride T.S. to 5 ml. of a 0.2% solution of arsthinol in alcohol: a light green color is produced which does not change on the addition of water *(difference from the O-acetyl derivative in which the green color produced changes from purple to brown on adding water).*

Transfer 10 mg. of arsthinol to a 25 ml. Erlenmeyer flask, add 1 gm. of sulfur-free zinc dust and 5 ml. of diluted hydrochloric acid and hold moistened lead acetate test paper over the mouth of the flask: the paper turns black *(presence of sulfur).*

Purity Tests: Suspend 10 mg. of arsthinol in 2 ml. of 1% sodium bicarbonate. Add 1 drop of freshly prepared sodium nitroprusside T.S.: no red or violet color develops *(absence of free sulfhydryl group).* Add 2 drops of sodium hydroxide T.S.: a violet color appears *(presence of bound sulfhydryl group).*

Thoroughly mix 0.5 gm. of arsthinol in 5 ml. of 5% hydrochloric acid. Filter the mixture, add 1 drop of 3% potassium dichromate: no red or brown color results *(absence of aminohydroxyphenylarsonic acid).*

Thoroughly mix 0.25 gm. of arsthinol in 5 ml. of 1% hydrochloric acid, filter, and to the filtrate add 2 ml. of magnesia mixture T.S.: no precipitate forms *(absence of inorganic arsenates).*

Dry about 2 gm. of arsthinol at 105° for 4 hours: the loss in weight does not exceed 1.0%.

Assay: (Arsthinol) Transfer to a 250 ml. iodine flask about 0.1 gm. of arsthinol, accurately weighed, and dissolve it in 20 ml. of propylene glycol. Add 5 ml. of diluted sulfuric acid and 20 ml. of 0.1 *N* iodine, and allow the reaction mixture to stand in the dark for 2 hours with occasional stirring. Titrate the excess iodine with 0.1 *N* sodium thiosulfate. Each milliliter of 0.1 *N* iodine consumed is equivalent to 0.008682 gm. of arsthinol. The amount of arsthinol is not less than 97.5 nor more than 102.5%.

Dosage Forms of Arsthinol

TABLETS. *Identity Tests:* Grind a number of tablets equivalent to about 0.5 gm. of arsthinol. The powdered tablets respond to the identity tests for the active ingredient in the monograph for arsthinol.

Assay: (Arsthinol) Transfer to a 250 ml. iodine flask an amount of powdered tablets, accurately weighed, equivalent to about 0.1 gm. of arsthinol. Add 20 ml. of propylene glycol and proceed as directed in the assay for arsthinol starting with, "Add 5 ml. of diluted sulfuric acid . . ." Each milliliter of 0.1 *N* iodine consumed is equivalent to 0.008682 gm. of arsthinol. The amount of arsthinol is not less than 95.0 nor more than 105.0% of the labeled amount.

Endo Products, Inc., Richmond Hill, N. Y.

Tablets Balarsen: 0.1 gm.

COUNCIL ON PHYSICAL MEDICINE AND REHABILITATION

APPARATUS ACCEPTED

The following additional product has been accepted as conforming to the rules of the Council on Physical Medicine and Rehabilitation of the American Medical Association for inclusion in Apparatus Accepted. A copy of the rules on which the Council bases its action will be sent on application.

RALPH E. DE FOREST, M.D., *Secretary.*

Continentalair Iceless Oxygen Tent, Model M-4000

Continental Hospital Service, 18624 Detroit Avenue, Cleveland (Lakewood) 7, Ohio.

The Continentalair Iceless Oxygen Tent, Model M-4000, is an electrically driven apparatus for administering a cooled stream of oxygen to a patient in bed. It differs from the previously accepted Model M-3000 in that the inside air chamber, which houses the cooling coil and was heretofore constructed of galvanized sheet steel, is now cast of a single piece of aluminum. The change not only reduces the total weight of the apparatus by about 9 kg., but also reduces the complexity of the apparatus and the danger of leaks.

Continentalair Iceless Oxygen Tent, Model M-4000.

Unpacked, the present model weighs 72 kg. (185 lb.). Packed for shipment it measures 134 by 66 by 69 cm. (53 by 26 by 27 in.) and weighs 123 kg. (272 lb.). It requires a 60-cycle alternating current at 115 volts and draws 736 watts.

Evidence of satisfactory construction and performance was obtained from a laboratory acceptable to the Council.

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NEOPLASMS IN IDENTICAL TWINS

For some years the influence of heredity on the development of disease has held the attention of investigators in almost every field of medicine. Slye's [1] studies on the incidence and inheritability of spontaneous tumors in mice have stimulated interest in "cancer families" and other disease in twins. Reports of the occurrence of such diseases as epilepsy, mongolism, schizophrenia, teratomas, and ovarian dermoids in twins [2] have emphasized the role of heredity in the development of these conditions. Although many isolated case reports of the existence of tumors in twins had been published, it remained for MacFarland and Meade [3] in 1932 to present an exhaustive survey of reports in the literature of "similar, simultaneous, and symmetrical" tumors in both of identical twins; they did not find, however, that tumors in nonidentical twins were a frequent occurrence.

In 1940 Macklin [4] made a critical analysis of the relation of twins to neoplasms, comparing the incidence of tumors in identical twins (monozygous) with that present in nonidentical twins (dizygous, fraternal). In a series of 62 pairs of identical twins, both were affected by tumor in 38 instances (61.3%), with similar tumors occurring in 36 of the 38 pairs of twins (94.7%). The differences in age at the time of onset of symptoms in the pairs of twins averaged 1½ years. In contrast, in 43 pairs of nonidentical twins both were affected by tumor in 15 instances (35%), with similar tumors occurring in 8 pairs (53.5%). The differences in age at the time of onset of symptoms in the pairs of twins averaged 6.3 years.

Pastel, Phillips, and LaPalme [5] recently described three pairs of identical twins in whom neoplasms occurred, both twins having similar tumors and the average differences in age at the onset of symptoms being 11⅓ months. With respect to the occurrence of neoplasms, they concluded that there are at least three ways in which identical twins are more similar to each other than are nonidentical twins: 1. The chance that both of a pair of twins will be affected by tumor if cancer develops in one is much greater for identical twins than for nonidentical twins. 2. Should both of a pair of twins be affected, the chances that the tumor will be similar in both is much greater when the pair are identical. 3. When both of a pair are affected, the age of twins at the onset of the tumors is more nearly the same when the pairs are identical.

1. Wells, H. G.; Slye, M., and Holmes, H. F.: Comparative Pathology of Cancer of Alimentary Canal, with Report of Cases in Mice: Studies in Incidence and Inheritability of Spontaneous Tumors in Mice, Am. J. Cancer **33**: 223, 1938.

2. Edmonds, H. W., and Hawkins, J. W.: The Relationship of Twins, Teratomas, and Ovarian Dermoids, Cancer Research **1**: 896, 1941.

3. MacFarland, J., and Meade, T. S.: The Genetic Origin of Tumors Supported by Their Simultaneous and Symmetrical Occurrence in Homologous Twins, Am. J. M. Sc. **184**: 66, 1932.

4. Macklin, M. T.: An Analysis of Tumors in Monozygous and Dizygous Twins, with Report of 15 Unpublished Cases, J. Hered. **31**: 277, 1940.

5. Pastel, H.; Phillips, K. T., and LaPalme, L. G.: Neoplasms in Identical Twins: Case Reports of Three Pair, Connecticut M. J. **17**: 303 1953.

PARENTERAL ADMINISTRATION BY JET INJECTION

For some years there has been an interest in the possibility of using "jet injections" as a method for the parenteral administration of drugs. In this procedure, no needle is used, the fluid to be injected being forced through the skin as a fine spray under high pressure by means of a special perforated syringe. Among the several advantages claimed for this procedure is a more uniform rate of absorption than is possible with the conventional method of intramuscular or subcutaneous injection. This is particularly important when it is desired to measure rate of utilization, storage, or excretion in diagnostic procedures. A recent report [1] describes the use of a jet injector (Hypospray) for the administration of radioactive isotopes. For both diagnostic and therapeutic purposes, it is advantageous to use a method of administration that gives the greatest possible uniformity in rate of absorption of the injected isotope. When a jet injector is used, the solution penetrates the skin into the tissues about an inch below the surface and does not form an appreciable pool. On the other hand, when a hypodermic needle is used for the injection, an irregularly shaped pool is presumably formed, absorption from which may be expected to depend on geometric and surface area considerations.

Experimentally, it was shown that jet injection is the more satisfactory method from the standpoint of uniformity of absorption rates. Other advantages peculiar to work with radioactive isotopes are apparent, such as the lessened possibility for contamination through leakage, simplified shielding to reduce the radiation hazard to the operator, and probably also a reduction in local effects at the injection site due to local irradiation effects.

In the report referred to above, normal subjects were given 0.5 μc of iodine 131, potassium 42, or sodium 24 into the thigh by means of the jet injector. The rate of disappearance of the radioactivity of the injected material was measured with a wide-angle scintillation counter. No significant differences were found among the results with these three isotopes. In all cases, the rate of disappearance was exponential, more uniform, and generally faster than was the case when ordinary subcutaneous injections were used. These authors also report their results with a small series of patients with thyroid disturbance and

1. Bauer, F. K.; Cassen, B.; Youtcheff, E., and Shoop, L.: Jet Injections of Radioisotopes, Am. J. M. Sc. **225**: 374-378 (April) 1953.

with heart disease. Of special interest is the observation that patients with hypothyroidism or with cardiac failure and edema showed a substantially lower rate of absorption than the normal controls. The amount of isotope that is required to give readily measured amounts of radiation can be considered to be physiologically harmless. Many practical uses may well be found for parenteral administration by jet injection in the further application of radioactive isotopes to problems in medical diagnosis and therapy.

MISUSE OF ANTIBIOTIC TROCHES

Physicians are urged through advertisements to prescribe antibiotic troches casually for the treatment of infections of the throat, although in 1949 the Council on Pharmacy and Chemistry omitted from New and Nonofficial Remedies troches containing penicillin because of numerous instances of relatively severe sensitivity reactions. Effective concentration of the medicament cannot be maintained for long on the surface of the tonsils or of the pharynx because of the continual washing effect of saliva. Actually, it is impossible to render the throat sterile, or even aseptic, except possibly for a short time. While it has been observed that in superficial infections of the throat the local administration of penicillin, aureomycin, oxytetracycline (Terramycin), bacitracin, and other antibiotic and chemotherapeutic agents may be effective, their value as topical agents diminishes when the pathogenic micro-organisms have penetrated deeply into the tissues. Once this deeper infection has occurred, locally applied medicaments in the form of troches, lozenges, pastilles, and medicated chewing gum are of dubious therapeutic value. In general, it is hazardous to rely on local medication alone in the treatment of severe infections of the throat.

Recent studies by Kutscher and his associates [1] emphasize some of the reactions that follow the use of aureomycin, oxytetracycline, and procaine penicillin G troches in a group of 343 patients. A control group of 175 patients received placebo troches that were identical in content and appearance with the medicated troches except for the inert filler that replaced the active ingredients. Untoward reactions occurred in 51 of 100 patients receiving aureomycin troches, in 38 of 100 patients receiving procaine penicillin G troches, and in 76 (53.2%) of 143 patients receiving oxytetracycline troches. These reactions to the troches were sufficiently severe to warrant discontinuance of therapy in 14% of the aureomycin-treated patients, in 11% of the penicillin-treated patients, and in 14.7% of the patients treated with oxytetracycline. Although the untoward reactions primarily involved the gastrointestinal tract, severe glossitis, stomatitis, and pharyngitis occurred in 8% of the patients being treated with aureomycin troches, in 6% of the patients receiving penicillin troches, and in 9% of the patients receiving oxytetracycline troches. Some of the oropharyngeal reactions to the three types of antibiotic troches persisted for from 1 to 21 days. No oral or pharyngeal reactions were observed in the group of 175 patients who received the placebo troches.

KARTAGENER'S SYNDROME

Since the triad of situs inversus, bronchiectasis, and chronic sinusitis, which is known as Kartagener's syndrome, was first reported in 1933, 41 cases have been described in the medical literature. The lesions found in the nasal cavity and paranasal sinuses of patients with Kartagener's syndrome are of a variable nature and include mild or severe sinusitis, nasal polyposis, and hypoplasia of the sinuses. According to Kartagener and Ulrich,[1] the simultaneous occurrence of bronchiectasis and sinusitis indicates a coordinated constitutional factor in the paranasal sinuses and bronchial tree that is presumably responsible for localization of infections. The incidence of bronchiectasis is significantly greater in persons with transposition of the viscera than in the general population. Olsen [2] describes 14 cases (14.5%) in 85 patients with dextrocardia observed during a 27 year period, 10 of the 14 having nasal polyposis. Katz and his associates [3] assert that the increased incidence of bronchiectasis among persons with situs inversus suggests a congenital factor in its pathogenesis. Whether a congenital predisposition or defect is an absolute prerequisite to the development of bronchiectasis is questionable, although it is apparently an important factor in some instances.

Whereas Cockayne [4] interprets situs inversus as being dependent on a single autosomal recessive gene, this concept is disputed by Torgersen,[5] who maintains that transposition of the viscera is occasionally inherited as a dominant character, occasionally as a recessive one, and in many cases is not at all hereditary. He regards the predisposition to disease of the nasal cavity and bronchi among patients with situs inversus as hereditary and probably caused by multiple genetic factors. Finally, persons with situs inversus, especially those with concomitant paranasal sinus infection, should be thoroughly investigated for bronchiectasis, while the families of patients with Kartagener's syndrome should be screened to determine the presence or absence of similar abnormalities.

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1. Kutscher, A. H.; Budowsky, J.; Lane, S. L., and Chilton, N. W.: Reactions Following the Use of Aureomycin and Procaine Penicillin Troches: A Controlled Study, J. Allergy **24**: 164 (March) 1953; Reactions Following the Use of Terramycin Troches: A Controlled Study, ibid. **23**: 177 (March) 1952.

1. Kartagener, M., and Ulrich, K.: Zur Pathogenese der Bronchiektasien: Bronchiektasien und Veränderungen der Nasennebenhöhlen, Beitr. z. Klin. d. Tuberk. **86**: 349, 1935.

2. Olsen, A. M.: Bronchiectasis and Dextrocardia: Observations on Etiology of Bronchiectasis, Am. Rev. Tuberc. **47**: 435, 1943.

3. Katz, M.: Benzier, E. E.; Nangeroni, L., and Sussman, B.: Kartagener's Syndrome (Situs Inversus, Bronchiectasis and Chronic Sinusitis), New England J. Med. **248**: 730, 1953.

4. Cockayne, E. A.: Genetics of Transposition of Viscera, Quart J. Med. **7**: 479, 1938.

5. Torgersen, J.: Transposition of Viscera—Bronchiectasis and Nasal Polyps: Genetical Analysis and Contribution to Problem of Constitution, Acta radiol. **28**: 17, 1947.

ORGANIZATION SECTION

FEDERAL MEDICAL LEGISLATION

Public Assistance

Senator Humphrey (D., Minn.) in S. 1933 would extend to September, 1956, the present rate of federal financial participation for old-age assistance, aid to the blind, aid to permanently and totally disabled, and aid to dependent children. The federal share would remain at four-fifths of the first $25 and one-half of the next $30 for each person covered under the first three of the above-mentioned state programs. In the case of dependent children the present federal rate is four-fifths of the first $15 and 50% of the balance, with a maximum payment of $30 for the first child and a maximum of $21 for additional children in the same family. This measure was referred to the Committee on Finance.

STATE MEDICAL LEGISLATION

Alabama

Bill Introduced.—H. 260, proposes to make it unlawful for any employer to require any employee or applicant for employment to pay **the cost of a medical examination** or the cost of furnishing any records required by the employer as a condition of employment.

California.

Bill Introduced.—A. 3513, proposes to require any hospital which accepts **alcoholic or narcotic patients** for resident treatment to at all times have in attendance upon the premises at least one person who possesses a physician and surgeon's certificate.

Bills Enacted.—A. 459, has become ch. 726 of the laws of 1953. It **prohibits the use of the title "hospital"** by any person or persons to identify a facility for the diagnosis, care, and treatment of human illness other than a facility subject to or specifically exempted from the hospital licensure provisions. It also amended the exemption provisions by exempting any hospital conducted by and for the adherents of a well-recognized religious denomination. The prior exemption had applied to hospitals conducted by or for the adherents of any well-recognized religious denomination. A. 2237, has become ch. 680 of the laws of 1953. It provides that **instruction on the nature of alcohol and narcotics** and their effects upon the human system as determined by science shall be included in the curriculum of all elementary and secondary schools. A. 2241, has become ch. 704 of the laws of 1953. It authorizes the **revocation of a driver's license** of any person who has been convicted of a narcotic offense when the use of a motor vehicle was involved in the commission of such offense.

Connecticut

Bill Enacted.—H. 284, has become public act no. 172 of the acts of 1953. It amends the law relating to the list of **drugs which may be sold only upon a physician's prescription** by adding to such list methylparafynol, bishydroxycoumarin, and thiouracil. It eliminated from such list sulfanilamide. The law also requires that the prescription for such drugs be signed by a practitioner licensed by law to administer drugs instead of just by "a physician" as in the prior law.

Florida

Bills Introduced.—H. 1109, proposes to authorize the insurance commissioner to regulate **agreements for the maintenance or personal care of an individual** for a period of one or more years or for life for a fixed fee. The term "care" is defined as meaning furnishing to a person shelter, food, clothing, drugs, medicine, medical attention, entertainment, or other personal advantage or attention, either one or more, for a term of years or for life. H. 1142, proposes to authorize boards of county commissioners in counties of a certain size to provide for **life and accident, hospitalization, or annuity insurance,** or all of them, for county employees and their families upon a group plan. H. 1265, proposes the formulation and operation of a program for the **prevention, care, treatment, and rehabilitation of alcoholics.** H. 1367, proposes to amend the law relating to county medical examiners by fixing the salary of the county medical examiner and authorizing him to engage in **the private practice of medicine and surgery** to such extent as it does not interfere with his duties as county medical examiner. The proposal also fixes the salary of assistant county medical examiners.

Bills Enacted.—H. 567, became law without approval, May 11, 1953. It authorizes the board of county commissioners of Orange County to provide for **life, accident, health, hospitalization, or annuity insurance** for county employees and their families under a group insurance plan. H. 818, became law without approval, May 19, 1953. It authorizes the board of county commissioners of Palm Beach to provide **life, health, accident, hospitalization, or annuity insurance** for county employees and members of their families on a group insurance plan.

Hawaii

Bill Introduced.—H. C. R. 73, proposes to resolve to memorialize the Congress of the United States to enact suitable legislation and appropriate money **continuing the present aid to the leprosy program** of the board of health of the Territory of Hawaii.

Illinois

Bills Introduced.—H. R. 77, proposes the creation of a committee to investigate the manner in which medical schools are accredited by the department of registration and education and to investigate the delegation of powers by, the methods and personnel of, and the conduct of examination by, **the examining committee for medical practitioners and midwives** in the department of registration and education and any direct or indirect domination of said examining committee **by any medical society or association.** H. 770, proposes to require the **annual registration** of all persons holding licenses to practice medicine or to practice the treatment of any human ailments in any manner as a profession. H. 823, proposes the **creation of a Krebiozen investigating committee** to make a thorough investigation for the purpose of ascertaining the facts of the controversy that has arisen at the University of Illinois concerning research on Krebiozen and to consider what legislative action, if any, is necessary or desirable. The proposal would require this committee to report its finding and recommendations at the 1955 session of the General Assembly. S. 464, proposes the appointment by the director of the department of registration and education of a **chiropractic examining board** and defines chiropractic as a philosophy, science, and art of things natural, a system of locating misaligned or displaced vertebrae of the human spinal column, the procedure preparatory to, and the adjustment by hand, of such misaligned or displaced vertebrae of the human body, without the use of drugs or surgery, for the correction of the cause of disease together with the use of scientific instruments for analysis and diagnosis.

Maryland

Bills Enacted.—H. J. R. 3, was approved May 6, 1953. It provides that the committee on medical care be requested to give detailed and adequate study to the question of establishing a **state public health policy** as to the respective financial responsibility of the state and of its several counties. H. R. 65, was adopted March 23, 1953. It resolves that the governor appoint a commission to study means for establishing a **state blood bank** in the state of Maryland. H. R. 71, was adopted April 1, 1953. It resolves that the governor appoint a commission to make a thorough and complete reinvestigation and reevaluation of the **medical care program** for indigents throughout the entire state.

Massachusetts

Bill Enacted.—H. 745, has become ch. 30 of the resolves of 1953. It provides for the appointment of a special commission to make an investigation relative to the sale, furnishing, delivery, exchange, and **use of narcotic drugs** within the commonwealth with a view to the enactment of legislation as will most effectively protect the people of the commonwealth from the terrible consequences of drug addiction.

Ohio

Bill Introduced.—H. J. R. 77, proposes the creation of a committee to investigate **all hospital association plans** in the state to determine use of present finances with a view to more fully protecting subscribers thereto and to determine if greater powers of control should be granted to the superintendent of insurance.

Wisconsin

Bills Introduced.—A. 238, proposes regulations whereby the board of medical examiners may license and issue certificates to practice **physical therapy.** S. 133, proposes that no person without a license or certificate of registration from the state board of medical examiners shall have the **right to testify in a professional capacity on a subject relating to medical treatment as a medical or osteopathic physician or practitioner of any other form or system or treating the sick;** provided that a medical or osteopathic physician licensed to practice in another state may testify as the attending or examining physician or surgeon to the care, treatment, examination, or condition of sick or injured persons whom he has treated in the ordinary course of his professional practice. Such nonresident witnesses, however, could not be called unless the party calling such witness has served on the opposing party a five day written notice in advance for calling such witness stating the name of such witness, his residence, and business address. S. 640, proposes to **exempt from the chiropractic act persons practicing naturopathy** provided such person presents a certificate from a legally established naturopathic association, institution or organization certifying that he is of good moral and professional character, a graduate of a duly chartered and reputable naturopathic college, and proficient as a doctor of naturopathy by passing the required examination leading to membership in the Wisconsin Naturopathic Association, Inc. S. 641, proposes to provide for a **naturopathic member** of the State Board of Medical Examiners and the licensing of naturopaths by such board. Naturopathy is not defined in this proposal.

The summary of federal legislation was prepared by the Washington Office of the American Medical Association and the summary of state legislation by the Bureau of Legal Medicine and Legislation.

MEDICAL NEWS

ALABAMA

New Clinic Building.—Ground breaking ceremonies were recently held at the site of the $750,000 air-conditioned outpatient clinic building addition to the Lloyd Noland Hospital in Fairfield. Clinics to be housed in the new building include pediatrics, obstetrics and gynecology, orthopedics, internal medicine, and emergency. Their removal will make possible an additional 40 beds for hospital patients in the main building. Funds for the new building were given by the Tennessee Coal and Iron Division of the United States Steel Corporation, which in 1951 presented the hospital and a cash contribution for working funds to the Lloyd Noland Foundation, named for the late Dr. Noland, founder and first superintendent of the hospital.

CALIFORNIA

Postgraduate Conferences.—The University of California Medical School will hold a conference on general surgery, June 15-19 ($75 fee) at the University of California Hospital, San Francisco, and a pediatric conference, June 22-26 ($50 fee) at University Extension Building, 540 Powell St., San Francisco. Applications should be addressed to Dr. Stacy R. Mettier, Head of Postgraduate Instruction, Medical Extension, U. C. Medical Center, San Francisco 22.

Fluoridation Exhibit Available.—A portable exhibit on fluoridation (designed for use on a table) has been placed on deposit with the California State Department of Health by the regional office of the U. S. Public Health Service, for loan to interested groups. Requests for its use should go through the local health department to the Bureau of Health Education, 760 Market St., San Francisco 2. Community groups in areas without full-time health departments may send their requests directly. The only expense to the borrower is the payment of return transportation (shipping weight, 16 lb.).

COLORADO

Annual Intern-Resident Clinics.—The annual clinics, conducted by the interns and residents of the University of Colorado Medical Center and participating hospitals in Denver, will be held June 11-12 at Colorado General Hospital (Sabin Amphitheater), with the Friday morning session in the Surgical Amphitheater of Denver General Hospital. Dr. Michael E. DeBakey, professor of surgery, Baylor University College of Medicine, Houston, Texas, will deliver the annual lecture on "Critical Evaluation of the Problem of Thromboembolism" Thursday, 8:15 p. m., in the Denison Memorial Auditorium of the medical center. He will also lead the discussion following presentation of symposiums on peptic ulcer, appendicitis, burns, and benign surgical diseases of the gastric cardia, as well as the two afternoon series of papers in which members of the resident staffs will present the results of their own clinical and/or laboratory investigations.

CONNECTICUT

British Honor Dr. Fulton.—Dr. John F. Fulton, Sterling Professor of the History of Medicine, Yale University School of Medicine, New Haven, has been elected a fellow of the Royal College of Physicians. Although Dr. Fulton was not able to be present at the admission ceremony, he plans to spend the summer in Europe, where he will attend the 50th anniversary celebration of the Rhodes Scholarship Trust, International Congress of Medical Librarians in London, and the International Neurological Congress in Lisbon.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education and public health. Programs should be received at least three weeks before the date of meeting.

Dr. Thoms Retires as Department Head.—Dr. Herbert Thoms, chairman of the department of obstetrics and gynecology, Yale University School of Medicine, New Haven, will retire at the end of the current academic year. Dr. Thoms joined the faculty in 1915. He is a past president of the New Haven County Medical Association and literary editor of the *Connecticut State Medical Journal*. He has been a member of the editorial boards of the *Obstetrical and Gynecological Survey*, the Washington, D. C., Institute of Medicine, and the "Davis System of Obstetrics and Gynecology." Dr. Thoms has been affiliated with William W. Backus Hospital, Norwich; Sloane Hospital for Women, New York; Grace-New Haven Community Hospital; Meriden Hospital; Charlotte Hungerford Hospital, Torrington; Norwalk Hospital; Stamford Hospital: Milford Hospital; and others.

DISTRICT OF COLUMBIA

Three Physicians Receive Law Degrees.—At the commencement exercises of the George Washington University Law School, Washington, D. C., May 27, the degree of bachelor of laws was conferred on Dr. Vasilios S. Lambros, Washington, D. C., Lieut. Commander Edwin C. Sweeney (MC), U. S. N., Falls Church, Va., and Commander Byron David Casteel (MC), U. S. N., Washington, D. C. Dr. Lambros is affiliated with Arlington and Doctors hospitals and has taught at the University of Chicago School of Medicine, Georgetown University, Washington, D. C., and the George Washington University. Lieutenant Commander Sweeney, attached to the Bureau of Medicine and Surgery in Washington, D. C., served with the Marine Corps as medical officer during World War II. Commander Casteel, who entered the Navy in July, 1942, received the Bronze Star for his duty in Korea.

IDAHO

State Medical Meeting in Sun Valley.—The Idaho State Medical Association will hold its annual meeting at the Challenger Inn in Sun Valley, June 14-17, under the presidency of Dr. Wallace Bond, Twin Falls. Out-of-state speakers include: Dr. Eugene A. Stead Jr., Durham, N. C., Bernard J. Hanley, Los Angeles, Orvar Swenson, Boston, Joyle O. Dahl, Portland, Ore., and M. Digby Leigh, Vancouver, B. C. Social functions include sports, annual barbecue at Trail Creek Cabins, stag dinner, ladies' dinner, Sun Valley Ice Carnival, and banquet.

ILLINOIS

Society News.—At its annual meeting the Illinois Society for Medical Research elected Dr. Louis N. Katz, Chicago, president; Dr. Carl C. Pfeiffer, Chicago, vice-president; Dr. J. A. Wells, Chicago, treasurer; and N. R. Brewer, D.V.M., Chicago, secretary.

Course for Audiologists.—Northwestern University announces two courses in audiology (June 19 to Aug. 1; June 19 to Aug. 22), including a symposium on modern trends in public school speech and hearing programs, for teachers of the deaf and hard of hearing, speech correctionists, clinical audiologists, child audiologists, industrial audiologists, and others interested in hearing problems.

Chicago

Cardiac Conference.—The Cardiovascular Committee of the Cook County Hospital will hold a clinicopathological cardiac conference June 12, 11 a. m. to 12 noon at the Children's Amphitheatre, 700 S. Wood St. Dr. Louis Feldman, attending physician, Cook County Hospital, will speak on "Coronary Insufficiency in Pulmonary Infarction."

Society News.—At the annual meeting of the Metropolitan Dermatological Society of Chicago the following officers were elected: Dr. Tibor Benedek, president; Dr. Franz Baumann, vice-president; and Dr. Harold W. Thatcher, secretary-treasurer.

——At the annual business meeting the Chicago Ophthalmological Society elected the following officers: president, Dr. Gail R. Soper, Evanston, Ill., vice-president, Dr. Karl J. Scheribel, recording secretary, Dr. Richard C. Gamble, councilor, Dr. Robert J. Masters, Indianapolis, and secretary-treasurer, Dr. Frank W. Newell.

Fellowship in Allergy.—Northwestern University Medical School, Chicago, offers a fellowship in allergy designed to provide training and experience for specialization. This fellowship is approved by the A. M. A. Council on Medical Education and Hospitals, is accredited by the Board of Internal Medicine for credit toward the formal training requirements of the board, and is approved for training by the Sub-Specialty Board of Allergy. Annual stipend, $2,500 to $3,600. Inquiries should be addressed to Dr. Samuel M. Feinberg, Northwestern University Medical School, 303 E. Chicago Ave., Chicago 11.

INDIANA

Dr. Thomas Honored.—"Dr. Charles E. Thomas Day" was recently celebrated in Leesburg by more than 800 friends attending the Leesburg Lions Club public program arranged as a tribute to the physician who is still serving the community after 52 years of practice. He was the recipient of a lounge chair and footstool.

New Research Laboratories.—At the dedication of the Miles-Ames and Sumner Research Laboratory Building, a symposium on sedative and hypnotic drugs was held in Elkhart, May 18-19. Drs. Lathan A. Crandall Jr., director, Miles-Ames Research Laboratory, and Walter A. Compton, vice-president in charge of medical and research division, Miles Laboratories, Inc., and Ames Company, Inc., presided. Other physicians participating included Drs. Ko K. Chen, Indianapolis, Ralph W. Gerard, Chicago, Robert G. Heath, New Orleans, Robert D. Dripps, Philadelphia, Harris Isbell, Lexington, Ky., William K. Livingston, Portland, Ore., and Robert W. Wilkins, Boston.

KENTUCKY

Postgraduate Seminar.—The Medical Seminar of the University of Louisville School of Medicine and the Kentucky State Medical Association will be held June 8-9 at the Kentucky Hotel Terrace Room, Louisville. Other sponsoring organizations include the Jefferson County Medical Society, Kentucky Academy of General Practice, Kentucky Committee of Fractures and Other Trauma of the American College of Surgeons, Kentucky Division of the American Cancer Society, Louisville Regional Blood Center of the American Red Cross, and the Kentucky Heart Association. All physicians of Kentucky and surrounding states are invited, and eight hours' credit will be given to members of the Academy of General Practice who attend the full course. A program by the Kentucky Cancer Society will be presented Monday morning. After a cardiac program at 2 p. m., speakers will include Dr. Richard L. Sutton Jr., associate professor of dermatology, University of Kansas School of Medicine, Kansas City, Kan. ("Contact Eczema"), Dr. James G. Hughes, associate professor of pediatrics, University of Tennessee College of Medicine, Memphis, Tenn. ("Management of Acute Nephritis in Children"), and Dr. George J. Curry, Flint, Mich. On Tuesday morning there will be a symposium on diseases of the blood. From 2 to 3 p. m. the Institute for Medical Research of the University of Louisville School of Medicine, located on the second floor of the Louisville General Hospital, will demonstrate various types of clinical investigational procedures, which it is now carrying out.

MASSACHUSETTS

New England Center Lectures.—The House Officers' Association of New England Center Hospital, Boston, announces that at 7 p. m. June 12 Dr. Frieda Fromm-Reichmann, director of psychotherapy, Chestnut Lodge Sanitarium, Rockville, Md., will present "Remarks on the Philosophy of Psychotherapy" in the Stearns Auditorium of the hospital. Discussors will be Drs. Bernard Bandler and Justin M. Hope, Boston. All interested persons are invited.

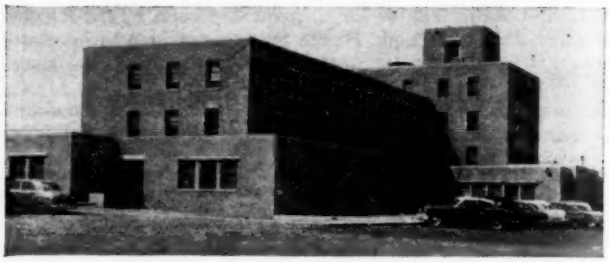
Dr. Enders Wins Passano Foundation Award.—John F. Enders, Ph.D., associate professor of bacteriology, Harvard Medical School, Boston, has been named winner of the 1953 Passano Foundation award ($5,000), in recognition of his work in the development of methods for culturing poliomyelitis viruses in tissue. The award was presented at a banquet at the Waldorf-Astoria in New York City, June 3, at which Dr. Emil Novak, Baltimore, acted as toastmaster, and Mr. Basil O'Connor, president of the National Foundation for Infantile Paralysis, evaluated the contribution of Dr. Enders.

MICHIGAN

Annual Clinic Day.—Bon Secours Hospital, 468 Cadieux Road, Grosse Pointe, will hold its annual clinic day June 9, with Dr. E. Gordon Aldrich general chairman for the program. Drs. Donald N. Sweeny Jr. and Lyle E. Heavner will serve as moderators for the morning session and Dr. Nelson M. Taylor for the evening meeting. Luncheon will be served by courtesy of the Sisters of Bon Secours Hospital, and a buffet supper by courtesy of the medical staff of the hospital. There will be no afternoon session. All members of the medical profession are invited.

NEW MEXICO

Research Laboratory Dedicated.—The Baird Memorial Research Laboratory, an addition to the Lovelace Foundation for Medical Education and Research and the Lovelace Clinic building, was recently dedicated in Albuquerque, with Dr. Franklin D. Murphy, chancellor of the University of Kansas and member of the A. M. A. Council on Medical Education and Hospitals, as principal speaker. Mr. Floyd B. Odlum, chairman, board of trustees of the Lovelace Foundation, and Dr. William R. Lovelace, Albuquerque, presided over the dedication program. Brig. Gen. Otis O. Benson Jr., Commandant, U. S. A. F. School of Aviation Medicine, Randolph Field, Texas, spoke on the history of the foundation and on the research carried out under the direction of Dr. W. Randolph Lovelace II, director of the foundation, and Dr. Clayton S. White, director of research. The addition will provide space for research and clinical offices. It was announced that a radiation therapy center was under construction, which would have a model B rotational beam therapy unit with a cobalt source providing gamma rays equivalent to a 3 million volt x-ray unit. In addition there will be a conventional 250 kv. therapy unit, superficial therapy unit, and facilities for radioactive isotope research and therapy.



Baird Memorial Research Laboratory in Albuquerque.

NEW YORK

Handbook for Mental Hospital Employees.—The New York State Department of Mental Hygiene has published for the employees in its 27 state hospitals and schools a booklet, "This Is Your Job," illustrated with cartoons by Bob Gustafson, who draws the comic strip "Tillie the Toiler." According to Dr. Newton J. Bigelow, commissioner of mental hygiene, the purpose of the handbook is to orient the employees to the functions of the institutions, prepare them for the problems they will encounter, and make them aware of the contribution they can make.

Appoint Industrial Hygiene Director.—Dr. Irving R. Tabershaw, associate professor of occupational medicine at the Columbia University School of Public Health, New York, has been appointed director of the Division of Industrial Hygiene and Safety Standards of the New York State Department of Labor, succeeding Dr. Leonard Greenburg, who resigned to become New York City's first commissioner of the new Department of Air Pollution Control. Dr. Tabershaw, who has been a consultant in industrial hygiene to the New York Operations Office of the Atomic Energy Commission since 1947, has been affiliated with the Massachusetts Department of Labor and Industries and the Division of Industrial Hygiene of the Alabama State Health Department and has served as director of the Eastern Medical Division, Liberty Mutual Insurance Company. During World War II he was a surgeon with the U. S. Public Health Service and in 1950 was on a mission as a specialist in industrial medicine in Occupied Germany for the State Department.

New York City

Society News.—The following officers of the New York Roentgen Society will take office Sept. 1: president, Dr. Irving Schwartz, vice-president, Dr. Harold W. Jacox, secretary, Dr. Jacob R. Freid, and treasurer, Dr. Sidney Rubenfeld.

New Residency Program.—Manhattan State Hospital, Ward's Island, New York, announces a three year residency program to fulfill the requirements of the American Board of Psychiatry and Neurology. A comprehensive program, including psychoanalytic seminars, weekly guest lectures, and affiliations with Mount Sinai Hospital, VA Hospital, and New York State Psychiatric Institute, are available. Information may be obtained by writing to Dr. John H. Travis, Director, Manhattan State Hospital.

Death of Dr. Corwin.—Edward H. L. Corwin, Ph.D., special consultant to the Committee on Public Health, Medical Society of the County of New York, died May 8 at the age of 67. Dr. Corwin, who was honored by the committee on public health relations of the New York Academy of Medicine, on his retirement as its executive secretary after 41 years of service, had been managing director and secretary-treasurer of the Blood Transfusion Association since 1929. From 1922 until 1934 he directed the Bureau of Hospital Information and Service of the United Hospital Fund of New York and in the early 1920's was in charge of the first comprehensive survey of local hospital facilities. After publication of the survey the United Hospital Fund organized its Bureau of Hospital Information and Service, the forerunner of the Hospital Council of Greater New York. Dr. Corwin was a former secretary-treasurer of the International Hospital Association and edited its journal. He served also as secretary of the Committee of 20 on Street and Outdoor Cleanliness and recently directed a survey of the health needs of the city, under the auspices of the Health Council of Greater New York in cooperation with the academy and other organizations. He was formerly secretary of the National Conference on Nomenclature of Disease and was author of numerous articles, reports, and books, including "The American Hospital," "Opportunities for the Medical and Public Health Education of Negroes," and "The Hospital Situation in Greater New York."

NORTH CAROLINA

Medical Town Hall Meeting at Durham.—Dr. Wilburt C. Davison, dean of Duke University School of Medicine, Durham, announces that the first of a series of Duke Medical Town Hall meetings will be a panel on poliomyelitis in the Page Auditorium June 7 at 4 p. m., with Dr. George J. Baylin as program chairman. The one and one-half hour meetings, which will be free and open to the public, will consist of a forum, with panel discussions or talks by medical experts and questions from the floor. Among topics scheduled for discussion are civil defense and atomic radiation; blue babies; tuberculosis; hearing problems in children; viruses; and blood banks.

NORTH DAKOTA

State Medical Meeting at Minot.—The annual meeting of the North Dakota State Medical Association was held in Minot May 11-12, under the presidency of Dr. Olafur W. Johnson, Rugby. Dr. Willis E. Brown, chairman of the department of obstetrics and gynecology, University of Arkansas School of Medicine, Little Rock, spoke, by courtesy of the North Dakota Cancer Society, on "Carcinoma of the Cervix." Panel discussions were held on "The Acute Abdomen" and "Anemias and Rh Factor."

University News.—The University of North Dakota School of Medicine, Grand Forks, which has under construction an addition to increase its laboratory facilities for teaching and research, has received a grant of $8,000 for cardiovascular research and teaching from the National Heart Institute; a grant-in-aid of $7,000 from the U. S. Atomic Energy Commission for study of "Effects of Whole Body Irradiation on Various Enzyme Systems in the Liver" by Dr. William E. Cornatzer and John P. Davison, Ph.D., of the department of biochemistry; and a grant of $10,000 for Dr. Robert Fischer of the department of bacteriology, from the North Dakota Cancer Society, to continue his work on virus papilloma. The sum of $11,200 has been received to establish, for the department of biochemistry, under the direction of Drs. W. E. Cornatzer and John P. Davison, the Guy and Bertha Ireland Laboratories for Cancer Research.

OHIO

Hematology Lectures.—The Medical Advancement Trust of the Maumee Valley Hospital announces an interhospital postgraduate lecture series on diseases of the blood by Dr. Maxwell M. Wintrobe, professor of medicine, University of Utah School of Medicine, Salt Lake City, in the Academy of Medicine Building, 3101 Collingwood Blvd., Toledo 10. On June 9 Dr. Wintrobe will speak on "Development of Knowledge Concerning the Anemias" (12 noon), "Pathogenesis of Various Types of Anemia" (4:30 p. m.), and "Diagnosis and Treatment of Anemia" (8 p. m.). On June 10 his program will be "Disorders of the Spleen and the Physiological Basis and Indications for Splenectomy" (12 noon), "Nature and Manifestations of Leukemia and Allied Disorders" (4:30 p. m.), and "Management of Leukemia and Allied Disorders" (8 p. m.).

PENNSYLVANIA

Health Education Workshops.—Under the sponsorship of the Pennsylvania Department of Health, Medical Society of the State of Pennsylvania, Pennsylvania Tuberculosis and Health Society, Pennsylvania Department of Welfare, and the Pennsylvania Department of Public Instruction, the Inter-Agency Planning Committee will conduct health education workshops at six educational centers: Pennsylvania State College in State College, June 9-26; Lehigh University, Bethlehem, June 16 to July 3; Slippery Rock State Teachers College, West Chester State Teachers College, University of Pittsburgh, and Temple University in Philadelphia, June 29 to July 17. Each workshop will have a maximum of 50 selected participants, including teachers, nurses, school administrators, dental hygienists, guidance workers, voluntary community health organization staff members, and parents.

TENNESSEE

Hospital News.—After 20 years' operation as a general hospital, the Physicians and Surgeons Hospital of Cleveland was recently converted to an eye, ear, nose, and throat clinic.

Courses for General Practitioners.—The University of Tennessee College of Medicine, Memphis, has announced a program for general practitioners, to be co-sponsored by John Gaston Hospital and Le Bonheur Children's Hospital, Memphis. The program will be offered by the divisions of obstetrics and gynecology, pediatrics, surgery, and medicine, each of which will accept only one physician for a minimum of one week, with an additional week available on request. Information may be obtained from the Postgraduate Department, University of Tennessee, Memphis.

WASHINGTON

Course on Fluid and Electrolyte Balance.—This postgraduate course will be presented June 22-24 in the Health Sciences Building, University of Washington School of Medicine, Seattle. Applications, accompanied by check for $37 (tuition, $25; laboratory kit, $12) must be postmarked on or before June 8. The course is sponsored by the University of Washington School of Medicine, Washington State Medical Association, and Washington State Department of Health.

WISCONSIN

Narcotic Violation.—Dr. Raffaele Lamacchia, 611-56th St., Kenosha, was convicted in the Municipal Court, Kenosha, of violating the state narcotic law. On March 6, he was sentenced to serve a term of one to three years. His sentence was suspended, and he was placed on probation for three years.

Dr. William Anderson Goes to University of Miami.—Dr. William A. D. Anderson, professor of pathology, Marquette University School of Medicine, Milwaukee, has accepted appointment as chairman of the department, University of Miami School of Medicine, Coral Gables, Fla., and director of the pathology laboratories, Jackson Memorial Hospital, Miami. He will assume his new position Aug. 1.

WYOMING

State Medical Meeting in Casper.—The Wyoming State Medical Society will hold its annual meeting June 11-13 at the Casper Elk's Lodge, under the presidency of Dr. Edward J. Guilfoyle, Newcastle. Dr. Louis H. Bauer, Hempstead, N. Y., Immediate Past President of the American Medical Association, will be the speaker at the banquet and dinner dance Saturday 7 p. m. at the Casper Country Club. Guest speakers and their first presentations at the scientific sessions include:

Charles B. Wills, Denver, Proctology in General Practice.
Emil G. Holmstrom, Salt Lake City, Pseudohermaphroditism.
H. Ivan Sippy, Chicago, Accurate Management of Peptic Ulcer.
Chauncey A. Hager, Denver, Biliary Surgery.
Herman F. Johnson, Omaha, Borderline Bone Tumors, 20 Year Survey.
Ferdinand R. Schemm, Great Falls, Mont., Clinical Management of Acute Myocardial Infarction.
Irving Puntenney, Chicago, Diagnosis and Treatment of Retinal Detachment.
Russell I. Williams, Cheyenne, Nasal Reconstructive Surgery and Newer Concepts of the Physiology of the Nose.
Royce D. Tebbet, Casper, Intravitreal Injection of Penicillin and Streptomycin for Purulent Endophthalmitis.

Luncheons will be held in the Corral Room of the lodge on Friday and Saturday, 12 noon, and smorgasbord in the Corral Room, Friday, 7 p. m. There will be a smoker in the Corral Room Thursday at 7 p. m. The Women's Medical Auxiliary will hold its annual meeting June 11 at Casper Elk's Lodge.

GENERAL

Need for Blood.—The National Blood Program of the Office of Defense Mobilization, Washington, D. C., announces that to meet the nation's need for whole blood and derivatives, more than 5 million pints must be donated voluntarily this year. Blood is vital to federal civil defense for building reserves of serum albumin, to accident victims in need of whole blood transfusions, to wounded servicemen in need of shock units of serum albumin, and to children exposed to poliomyelitis in need of gamma globulin. Call the local Red Cross, Community of Armed Forces Blood Donor Center, to schedule a donation of blood.

Laennec Essay Contest.—The Laennec Society of Philadelphia awards an annual prize of $200 for the best paper submitted in any field related to diseases of the chest. This prize is open to undergraduates, interns, residents, or fellows throughout the United States. The work should be original and not a review of literature. The society does not reserve the right of publication but requests that the prize-winning paper be presented at one of its regular scientific meetings. Five copies of the manuscript, double-spaced, should be in the hands of the secretary of the society, Dr. Charles M. Norris, 3401 N. Broad St., Philadelphia 40, by Oct. 1.

Award for Research in Orthopedic Surgery.—A prize of $1,000, donated by the Kappa Delta sorority, is offered annually by the American Academy of Orthopaedic Surgeons for the best research related to orthopedic surgery and performed by an American citizen in the United States. Selection for the current year will be made from publications after Jan. 1, 1951, or research presented to the Committee on Scientific Investigation of the American Academy of Orthopaedic Surgeons before Nov. 1, 1953. Researchers interested in competing may secure information from the chairman of the Committee on Scientific Investigation, American Academy of Orthopaedic Surgeons, Dr. John J. Fahey, 1791 W. Howard St., Chicago 26.

Heart Association Awards.—Dr. Irving S. Wright, president of the American Heart Association, announces that the American Heart Association and its affiliates during the first quarter of 1953 jointly awarded to 51 scientific investigators a total of $285,400 in the form of fellowships and investigatorships for studies that will be conducted during the fiscal year beginning July 1 at institutions in 20 states, and two in London. The latest joint research awards of the American Heart Association and its affiliates include support for 1 continued career investigator, 6 new established investigators, 14 continued established investigators, and 21 new and 9 renewed research fellows.

Plague-Infected Fleas.—According to the U. S. Public Health Service, its San Francisco Field Station has reported that the following specimens obtained in Kittitas County, Washington State, have been proved positive for plague: (1) one vial containing 93 fleas taken from 40 chipmunks trapped 18 miles east of Ellensburg on U. S. Highway 10 and (2) two vials out of three containing a total of 303 fleas taken from 54 deer mice trapped in the same area. The Hawaii Department of Health reports that a plague-infected dead rat, found within the endemic area of the Hamakua District, proved positive for Pasteurella pestis on laboratory examination. This is the second infected animal found this year.

Meeting of Dermatologists.—The American Dermatological Association will hold its annual meeting at the Lake Placid Club, Essex County, New York, June 9-13. The presidential address on "Atopic Dermatitis—Observations on the Normal Course and of Wool as an Etiologic Factor," by Dr. Earl D. Osborne, Buffalo, N. Y., Wednesday, 10:30 a. m., will be followed by introduction of Dr. Joseph G. Brennan, Rochester, Minn., A. D. A. essay medalist for 1952, who will speak on "Contributions to the Study of Pemphigus." Discussion will follow each of the 26 presentations. Wednesday, 6 p. m., the presidents' party will be given by Dr. and Mrs. Earl D. Osborne and Dr. and Mrs. Paul E. Bechet, Elizabeth, N. J. The association golf tournament for men and women will be held Friday, 2 p. m.

Starlight Plan for Postgraduate Study.—Postgraduate medical courses combined with a summer vacation will be available during July and August at Starlight, Pa. Weather permitting, recent advances in gastroenterology, hypertension, nephritis, arteriosclerosis, diabetes, and hematology will be presented under informal conditions outdoors (otherwise, indoors). Enrollment for each weekly course of 15 hours (10 a. m. to 1 p. m., Monday through Friday) is limited to 12. Arrangements for week-end stays may be made for those desiring to take more than a week's course. Lectures on interior decorating and home economics by specialists in these fields will be provided for the enrollees' wives. Afternoons may be devoted to sports and other recreations; evening social entertainment, sleeping accommodations, and meals will be provided. Details may be obtained from the Starlight Plan for Postgraduate Study, Wayne County, Starlight, Pa.

Foundation for Postgraduate Medical Education.—The Interamerican Foundation for Postgraduate Medical Education has been organized to encourage exchanges of educators, postgraduate students, and research workers in medicine and allied sciences in Latin and North American countries. The foun-

dation is designed to coordinate and extend opportunities through a central agency, which will in turn coordinate its program with that of other groups with parallel or overlapping interests in this field. Committees of medical educators in each Latin American country will be asked to assume responsibility for nomination of candidates for fellowships. The proposed program also provides for interchanges of a limited number of visiting lecturers, with expenses defrayed through the foundation. Dr. George M. Guest, Cincinnati, is president of the foundation, and Dr. James T. Case, Santa Barbara, Calif., is vice-president. The executive director of the foundation is Dr. Alberto Chattas, Cordoba, Argentina, with present headquarters at 112 E. Chestnut St., Chicago 11.

Fund for Psychiatric Research.—Sibylle K. Escalona, Ph.D., assistant professor at the Yale Child Study Center, New Haven, Conn., has been appointed executive officer of the foundation's 6 million dollar fund for research in psychiatry, the purpose of which is: "To support research into why people become mentally and emotionally ill, why they get well, how best to help them get well and how best to help them from becoming mentally and emotionally ill." Dr. Fredrick C. Redlich, professor of psychiatry at Yale and chairman of the fund's board of directors, explains that both income and principal of the fund will be expended over a period of about 20 years. Ideas for organization of the fund from interested persons and organizations are invited, but decisions on grants will not be made for at least six months. The directors are: Dr. Redlich, chairman; Dr. Charles D. Aring, professor of neurology, University of Cincinnati College of Medicine; Dr. John D. Benjamin, research psychiatrist of the Child Research Council, University of Colorado, Denver; Dr. Vernon W. Lippard, dean of the Yale University School of Medicine; David Shakow, Ph.D., professor of psychology, University of Illinois College of Medicine, Chicago; Dr. George W. Thorn, professor of medicine, Harvard Medical School, Boston; and Dr. John C. Whitehorn, professor of psychiatry, Johns Hopkins University School of Medicine, Baltimore.

Surgical Scholarships.—The American College of Surgeons has established the first of several contemplated scholarships in the field of research for candidates seeking a career in academic surgery who have recently finished or who are in the final months of their residency training program. Candidates must obtain the approval of the chairman of the department of surgery, dean of the same medical school, and the authority of an executive officer of the university making the proposal. Preference will be given to an American or Canadian citizen. Successful candidates will receive $20,000 over a three year period. The medical school or institution sponsoring a successful candidate may supplement this amount with the permission of the Committee on Selection of the American College of Surgeons. Medical schools or institutions supporting the nomination of a candidate will be required to provide a satisfactory place to work, with adequate facilities, as well as funds with which to support necessary research. It is expected that the major portion of the candidate's time will be spent in clinical or experimental research. On completion of the research scholarship, the medical school or institution supporting the candidacy of the nominee is expected to absorb the research scholar into its faculty and support him on a full-time basis with its own budget. Inquiries may be addressed to the Research Scholarship Committee, American College of Surgeons, 40 E. Erie St., Chicago 11.

Society News.—At the annual meeting of the Aero Medical Association in Los Angeles, Rear Adm. Bertram Groesbeck Jr. (MC) U. S. N., Commanding Officer of the National Naval Medical Center, Bethesda, Md., was installed as president and Brig. Gen. Otis O. Benson Jr. (MC) U. S. A. F., former commandant of the Air Force School of Aviation Medicine and now director of staffing and education in the Surgeon General's Office, was chosen president-elect. The association's Theodore C. Lyster award for outstanding achievement in the general field of aviation medicine was given to Capt. Wilbur E. Kellum (MC) U. S. N., a past president and Commanding Officer of the Naval Medical Research Institute, Bethesda, Md. Walter F. Grether, Ph.D., of the Air Force Aero Medical Laboratory, Wright-Patterson Air Force Base, Ohio, received the Raymond F. Longacre award for accomplishment in the psychological and psychiatric aspects of aviation medicine, and Dr. James P. Henry, also of the Aero Medical Laboratory, was given the Arnold D. Tuttle award for the most significant published research report in this specialty.——The Society of Biological Psychiatry, at its annual convention in Los Angeles, elected the following officers: president, Dr. Ladislas J. Meduna, Chicago, vice-presidents, Drs. Francis J. Braceland, Hartford, Conn., and Howard D. Fabing, Cincinnati, and secretary-treasurer, Dr. George N. Thompson, Los Angeles. ——At the annual meeting of the American Society for Clinical Investigation, in Atlantic City the following officers were elected: president, Dr. Carl V. Moore, St. Louis, vice-president, Dr. Paul B. Beeson, Atlanta, and secretary-treasurer, Dr. William M. M. Kirby, Seattle.

Prevalence of Poliomyelitis.—According to the National Office of Vital Statistics, the following number of reported cases of poliomyelitis occurred in the United States, its territories, and possessions in the weeks ended as indicated:

Area	May 23, 1953 PAR	May 23, 1953 NP	May 23, 1953 NS	May 17, 1952 Total
United States	56	44	56	122
New England States				
Maine	..	..	..	..
New Hampshire	..	..	..	..
Vermont	..	..	..	..
Massachusetts	..	2	..	2
Rhode Island	..	..	..	..
Connecticut	1	..	..	..
Middle Atlantic States				
New York	2	..	2	3
New Jersey	..	..	2	..
Pennsylvania	..	..	2	2
East North Central States				
Ohio	1	..	1	2
Indiana	..	..	2	1
Illinois	..	..	3	2
Michigan	..	2	..	..
Wisconsin	..	..	..	1
West North Central States				
Minnesota	5	..	2	..
Iowa	2	2	..	1
Missouri	2	..	1	1
North Dakota	..	..	2	2
South Dakota	..	..	1	3
Nebraska	..	1	..	1
Kansas	..	..	2	..
South Atlantic States				
Delaware	..	..	..	..
Maryland	1	..	..	..
District of Columbia	..	..	..	..
Virginia	..	..	..	1
West Virginia	3	1	..	1
North Carolina	2	1	..	1
South Carolina	..	..	..	..
Georgia	..	..	..	..
Florida	1	1	3	6
East South Central States				
Kentucky	2	..	..	1
Tennessee	..	1	3	3
Alabama	..	..	7	..
Mississippi	..	..	2	10
West South Central States				
Arkansas	..	1	..	1
Louisiana	1	2	..	8
Oklahoma	..	..	3	1
Texas	15	12	12	40
Mountain States				
Montana	..	..	..	..
Idaho	..	..	1	2
Wyoming	..	..	1	1
Colorado	..	..	1	..
New Mexico	..	..	..	1
Arizona	..	..	1	..
Utah	..	..	..	1
Nevada	..	..	..	..
Pacific States				
Washington	..	..	3	1
Oregon	1	..	..	..
California	17	18	..	22
Territories and Possessions				
Alaska	..	..	..	..
Hawaii	..	..	1	5
Puerto Rico	..	..	..	..

PAR = paralytic; NP = nonparalytic; NS = type not stated.
Iowa reported 1 paralytic and 2 nonparalytic cases for week ended May 16, 1953.

Methodology Research Award.—The Conference of State and Provincial Public Health Laboratory Directors solicits nomination, before June 30, of candidates for the Kimble Methodology Research award, consisting of $500 and an inscribed plaque. The candidate's work should be (1) a fundamental contribution, serving as a baseline for development of diagnostic methods, which fall within the province of the public health laboratory, or (2) the adaptation of a fundamental contribution to make it of use in a diagnostic laboratory. The work should have been completed within the preceding five years. Consideration will be given to nominations only if they are covered by a reprint or a summary with bibliography, and a statement of the considerations that justified recommendation of the study. The award will be made at the annual meeting of the Conference of State and Provincial Public Health Laboratory Directors. Transportation and subsistence of the candidate selected will be paid for by the Kimble Glass Company. Nomination blanks may be obtained from the Vermont Department of Health, 2 Colchester Ave., Burlington, Vt., or the Minnesota Department of Health, University Campus, Minneapolis 14.

PHILIPPINE ISLANDS

Schistosomiasis Control.—Plans have been drawn for construction of a technical center on the Island of Leyte, the Philippines, to serve as headquarters for a six year pilot project in schistosomiasis control. The building will house research laboratories and administrative offices, as well as an aquarium for the study of snails, vectors of schistosomiasis. It is estimated that 40 persons will be employed at the center. A three man international team provided by WHO will work with a matching team of experts from the Department of Health of the Philippines.

FOREIGN

Meeting of British Medical Association.—The British Medical Association will hold its annual meeting in Cardiff, Wales, July 9-17. Plenary sessions will be held Tuesday on coronary disease; Thursday, fibrositis; and Friday, overweight. Eleven sections have scheduled their meetings for Wednesday and six for Friday.

World Health Assembly Elects President.—At its meeting in Geneva, the sixth World Health Assembly elected by acclamation Dr. Murched Khater, Minister of Health of Syria, as its president. Dr. Khater since 1919 was one of the founders of the Syrian University and since 1919 head of the department of surgery. He is president of the Societé de Medico-Chirurgie of Damascus and was chief surgeon of the Syrian Army from 1948 to 1952, when he was appointed Minister of Health of Syria.

Korean Medical Student Organization.—Announcement was recently made of the organization of the Korean Medical Student Association in Japan. The association lists as the chief problems with which it is concerned: (1) need for promoting international friendship through interchange of medical science; (2) medical research on Korean health problems; (3) provision of scholarships and fellowships for Korean medical students; (4) need for development of medicine in Korea; (5) health of Korean residents in Japan. Further information may be obtained from Mr. Chin Kwang Chu, 15, Tanaka Genkyo-cho, Sakyo, Kyoto, Japan.

International Congress of Rheumatic Diseases.—This congress, held under the auspices of the International League Against Rheumatism, will convene Aug. 24-28 in Geneva, Switzerland, under the presidency of Prof. E. Jarlov of Copenhagen, Denmark. Topics for discussion include the connective tissue and its relation to rheumatism, steroid hormones in the treatment of rheumatism, surgical aspects of rheumatic therapy, and the patient with chronic rheumatism and his occupational future. Information may be obtained from the president of the Organization Committee, Prof. K. M. Walthard, Institut de Physiatrie, Hôpital Cantonal, Geneva, Switzerland.

MEETINGS

AMERICAN MEDICAL ASSOCIATION: Dr. George F. Lull, 535 North Dearborn St., Chicago 10, Secretary.

1953 Clinical Session, St. Louis, Dec. 1-4.

1954 Annual Session, San Francisco, June 21-25.

1954 Clinical Session, Miami, Florida, Nov. 30-Dec. 3.

1955 Annual Session, Atlantic City, N. J., June 6-10.

ALASKA TERRITORIAL MEDICAL ASSOCIATION, Sitka, July 15-17. Dr. William P. Blanton, P. O. Box 2569, Juneau, Secretary.

AMERICAN COLLEGE OF CARDIOLOGY, Hotel Statler, Washington, D. C., June 7-9. Dr. Philip Reichert, 480 Park Ave., New York 22, Secretary.

AMERICAN DERMATOLOGICAL ASSOCIATION, Lake Placid Club, Lake Placid, N. Y., June 9-13. Dr. Louis A. Brunsting, 102 Second Ave. S.W., Rochester, Minn., Secretary.

AMERICAN GYNECOLOGICAL SOCIETY, Lake Placid Club, Lake Placid, N. Y., June 15-17. Dr. John I. Brewer, 104 South Michigan Ave., Chicago, Secretary.

AMERICAN NEUROLOGICAL ASSOCIATION, Hotel Claridge, Atlantic City, N. J., June 15-17. Dr. H. Houston Merritt, 710 West 168th St., New York 32, Secretary.

AMERICAN ORTHOPEDIC ASSOCIATION, The Homestead, Hot Springs, Va., June 20-July 1. Dr. George O. Eaton, 4 East Madison St., Baltimore 2, Secretary.

AMERICAN PROCTOLOGIC SOCIETY, Hotel Statler, Boston, June 10-13. Dr. Stuart T. Ross, 131 Fulton Ave., Hempstead, N. Y., Secretary.

AMERICAN VETERINARY MEDICAL ASSOCIATION, Royal York Hotel, Toronto, Canada, July 20-23. Dr. J. G. Hardenbergh, 600 South Michigan Blvd., Chicago 5, Executive Secretary.

IDAHO STATE MEDICAL ASSOCIATION, Sun Valley, June 14-17. Dr. Robert S. McKean, 305 Sun Bldg., Boise, Secretary.

MAINE MEDICAL ASSOCIATION, Eastland Hotel, Portland, June 21-24. Mr. W. Mayo Payson, 142 High St., Portland 3, Executive Secretary.

MEDICAL LIBRARY ASSOCIATION, New House Hotel, Salt Lake City, June 16-19 Miss Louise C. Lage, Lilly Research Laboratories, 740 South Alabama St., Indianapolis 6, Secretary.

PACIFIC DERMATOLOGIC ASSOCIATION, Olympic Hotel and University of Washington, Seattle, July 9-10. Dr. Ervin H. Epstein, 447 29th St., Oakland 9, Calif., Secretary.

ROCKY MOUNTAIN CANCER CONFERENCE, Denver, July 8-9. Mr. Harvey T. Sethman, 835 Republic Bldg., Denver 2, Secretary.

SOUTH DAKOTA STATE MEDICAL ASSOCIATION, Alex Johnson Hotel, Rapid City, June 14-16. Dr. G. I. W. Cottam, 300 First National Bank Bldg., Sioux Falls, Secretary.

SOUTHERN OREGON MEDICAL SOCIETY, Oregon Caves Chateau, Oregon Caves, Ore., June 10. Dr. R. Ray Johnson, Grants Pass, Ore., Secretary.

SOUTHWEST ALLERGY FORUM, Hotel Muehlebach, Kansas City, Mo., June 14-16. Dr. Frederic Speer, 2601 Parallel Ave., Kansas City 4, Kans., Secretary.

STUDENT AMERICAN MEDICAL ASSOCIATION, Edgewater Beach Hotel, Chicago, June 15-17. Mr. Russell F. Staudacher, 535 North Dearborn St., Chicago 10, Executive Secretary.

UPPER PENINSULA MEDICAL SOCIETY, Escanaba, Mich., June 19-20. Dr. N. L. Lindquist, 1103 Ludington St., Escanaba, Mich., Secretary.

WESTERN BRANCH, AMERICAN PUBLIC HEALTH ASSOCIATION, Biltmore Hotel, Los Angeles, June 10-13. Mrs. L. Amy Darter, Division of Laboratories, State Department of Public Health, Berkeley, Calif., Secretary.

WEST VIRGINIA STATE MEDICAL ASSOCIATION, The Greenbrier, White Sulphur Springs, July 23-25. Mr. Charles Lively, P. O. Box 1031, Charleston 24, Executive Secretary.

WYOMING STATE MEDICAL SOCIETY, Henning Hotel, Casper, June 11-13. Dr. Glenn W. Koford, P. O. Box 1252, Cheyenne, Secretary.

FOREIGN

ASSOCIATION OF SURGEONS OF GREAT BRITAIN AND IRELAND, Leeds, England, May 13-15, 1954. Dr. Henry W. S. Wright, 45 Lincoln's Inn Fields, London W.C.2, England, Honorary Secretary.

BRITISH MEDICAL ASSOCIATION, Cardiff, S. Wales, July 13-17. Dr. A. MaCrae, B. M. A. House, Tavistock Square, London W.C.1, England, Secretary.

CANADIAN MEDICAL ASSOCIATION, Winnipeg, Manitoba, Canada, June 15-19. Dr. T. C. Routley, 135 St. Clair Avenue W., Toronto 5, Ontario, Canada, General Secretary.

CONGRESS OF INTERNATIONAL ANESTHESIA RESEARCH SOCIETY, Chateau Frontenac, Quebec, Canada, October 26-29. Dr. A. William Friend, 515 Nome Ave., Akron 20, Ohio, Chairman, Program Committee.

CONGRESS OF INTERNATIONAL LEAGUE AGAINST RHEUMATISM, Geneva and Zurich, Switzerland, Aug. 24-29. For information write: Dr. W. Tegner, The London Hospital, London E.1, England.

CONGRESS OF THE INTERNATIONAL SOCIETY OF ANGIOLOGY, Lisbon, Portugal, Sept. 18-20. Dr. Henry Haimovici, 105 East 90th St., New York 28, N. Y., U. S. A., Secretary.

CONGRESS OF THE INTERNATIONAL SOCIETY OF SURGERY, Lisbon, Portugal, Sept. 14-20. Dr. L. Dejardin, 141, rue Belliard, Brussels, Belgium, General Secretary.

INTERNATIONAL CONFERENCE ON THROMBOSIS AND EMBOLISM, Basle, Switzerland, July 15-19, 1954. Dr. W. Merz, Chief Medical Officer, Gynecological Clinic, University of Basle, Basle, Switzerland, Hon. Secretary.

INTERNATIONAL CONGRESS OF ACUPUNCTURE, Kolpinghaus, Adolf-Kolping-Strasse 1, Munich, Germany, August 22-25. Dr. G. Bachmann, 29 Lilienstrasse, München 9, Germany, Organizer and Secretary.

INTERNATIONAL CONGRESS OF ELECTROENCEPHALOGRAPHY AND CLINICAL NEUROPHYSIOLOGY, Boston, Mass., U. S. A., Aug. 18-21. Dr. Robert S. Schwab, Massachusetts General Hospital, Boston 14, Mass., U. S. A., Secretary-General.

INTERNATIONAL CONGRESS OF THE EUROPEAN SOCIETY OF HAEMATOLOGY, Amsterdam, Holland, Sept. 8-12. Dr. M. C. Verloop, Maliesingle 15, Utrecht, Holland, Secretary.

INTERNATIONAL CONGRESS ON GENETICS, Bellagio, Italy, August 4. Prof. C. Barigozzi, Instituto de Genetica, Universita de Milano, 10 via Celoria, Milan, Italy, Secretary.

INTERNATIONAL CONGRESS OF HIPPOCRATIC MEDICINE, Evian, France, Sept. 3-6. Prof. P. Delore, 13 rue Jarente, Lyons, France, Secretary-General.

INTERNATIONAL CONGRESS FOR HISTORY OF SCIENCE, Jerusalem, Israel, August 3-7. Prof. F. S. Bodenheimer, Hebrew University, Jerusalem, Israel, President.

INTERNATIONAL CONGRESS OF HYDROCLIMATISM AND THALASSOTHERAPY, Dubrovnik, Yugoslavia, May 8-16, 1954. Prof. C. Plavsic, Zeleni Venac 1, Belgrade, Yugoslavia, Secretary General.

INTERNATIONAL CONGRESS OF INTERNATIONAL COLLEGE OF SURGEONS, Sao Paulo, Brazil, April 26-May 2, 1954. Dr. Max Thorek, 1516 Lake Shore Drive, Chicago, Illinois, U.S.A., Secretary-General.

INTERNATIONAL CONGRESS OF LOGOPEDICS AND PHONIATRICS, Milan and Stresa, Italy, Sept. 1-7. Dr. Deso A. Weiss, 115 East 86th St., New York 28, N. Y., U. S. A., General Secretary.

INTERNATIONAL CONGRESS ON MEDICAL LIBRARIANSHIP, London, England, July 20-25. Mr. W. R. LeFanu, % London School of Hygiene and Tropical Medicine, Keppel Street, London, W.C.1, England, Chairman.

INTERNATIONAL CONGRESS ON MENTAL HEALTH, University of Toronto, Toronto, Ontario, Canada, Aug. 14-21, 1954. For information write: Executive Officer, International Congress on Mental Health, 111 St. George St., Toronto, Ontario, Canada.

INTERNATIONAL CONGRESS OF MICROBIOLOGY, Rome, Italy, Sept 6-12. For information write: Dr. V. Puntoni, Citta Universitaria, Rome, Italy.

INTERNATIONAL CONGRESS ON OBSTETRICS AND GYNECOLOGY, Geneva, Switzerland, July 26-31, 1954. Dr. H. de Watteville, Maternité Hôpital Cantonal, Geneva, Switzerland, President.

INTERNATIONAL CONGRESS OF OTORHINOLARYNGOLOGY, Amsterdam, Netherlands, June 8-13. Dr. W. H. Struben, J. J. Viottastraat 1, Amsterdam, Netherlands, Secretary.

INTERNATIONAL CONGRESS OF PAEDIATRICS, Havana, Cuba, Oct. 12-17. Prof. Felix Hurtado, 5a Avenue 124, Miramar, Havana, Cuba, President.

INTERNATIONAL CONGRESS OF RADIOLOGY, Copenhagen, Denmark, July 19-25. Professor Flemming Norgaard, 10 Oster Voldgade, Copenhagen K, Denmark, Secretary General.

INTERNATIONAL CONGRESSES OF TROPICAL MEDICINE AND MALARIA, Istanbul, Turkey, Aug. 28-Sept. 4. Professor Dr. Ihsan Sükrü Aksel, Tunel Meydam, Beyoglu, Istanbul, Turkey, General Secretary.

INTERNATIONAL CONVENTION OF X-RAY TECHNICIANS, Royal York Hotel, Toronto, Canada, June 28-July 2. For information write: Miss Beatrice Hurley, R.T., Registrar, St. Catherine Hospital, East Chicago, Ind., U. S. A.

INTERNATIONAL GERONTOLOGICAL CONGRESS, London and Oxford, England, July 12-22, 1954. Prof. R. E. Tunbridge, General Infirmary, Department of Medicine, The University, Leeds, England, President.

INTERNATIONAL LEPROSY CONGRESS, Madrid, Spain, Oct. 3-10. Dr. Felix Contreras, Moreto 15, Madrid, Spain, Secretary.

INTERNATIONAL NEUROLOGICAL CONGRESS, LISBON, Portugal, Sept. 7-12. Prof. Almeida Lima, Avenida do Brazil 53, Lisbon, Portugal, Secretary-General.

INTERNATIONAL PHYSIOLOGICAL CONGRESS, Montreal, Canada, Aug. '31-Sept. 4. Dr. A. S. V. Burgen, Dept. of Physiology, McGill University, Montreal, Canada, Secretary.

INTERNATIONAL PSYCHO-ANALYTICAL CONGRESS, Bedford College, Regent's Park, London N.W.1, England, July 26-30. Dr. Ruth S. Eissler, 285 Central Park West, New York 24, N. Y., Hon. Secretary.

INTERNATIONAL SOCIETY FOR THE STUDY OF BIOLOGICAL RHYTHMS, Basle, Switzerland, Sept. 18-19. For information write: Prof. Dr. F. Georgi, Neurologische Universitats-Poliklinik, Socinstrasse 55, Basle, Switzerland.

INTERNATIONAL VETERINARY CONGRESS, Stockholm, Sweden, Aug. 9-15. Prof. Axel Isaksson, Institute of Veterinary Medicine, Stockholm 50, Sweden, Secretary.

IRISH MEDICAL ASSOCIATION, Waterford, Ireland, July 1-4. Dr. P. J. Delaney, 10, Fitzwilliam Place, Dublin, Ireland, Medical Secretary.

LATIN AMERICAN CONGRESS OF OTORHINOLARYNGOLOGY, Caracas, Venezuela, Feb. 21-25, 1954. Dr. Victorino Marquez Reveron, Centro Medico, Caracas, Venezuela, Secretary-General.

PACIFIC SCIENCE CONGRESS, Quezon City and Manila, Philippines, Nov. 16-28. Dr. Patrocinio Valenzuela, College of Pharmacy, University of the Philippines, Quezon City, Philippines, Secretary-General.

PAN AMERICAN CONGRESS OF THE MEDICAL PRESS, Buenos Aires, Argentine, July 12-16. Secretaria del Congress, 763 Uriburu, Buenos Aires, Argentine.

PAN AMERICAN CONGRESS OF OTORHINOLARYNGOLOGY AND BRONCHOESOPHAGOLOGY, Mexico, D.F., Mexico, Feb. 28-March 4, 1954.

SECTIONAL MEETING, AMERICAN COLLEGE OF SURGEONS, London, England, May 17-19, 1954. Dr. Michael L. Mason, 40 East Erie St., Chicago 11, Ill., U. S. A., Secretary.

WORLD CONFERENCE ON MEDICAL EDUCATION, British Medical Association House, Tavistock Square, W.C.1, London, England, Aug. 22-29. Secretariat: World Medical Association, 2 East 103d St., New York 29, N. Y., U. S. A.

WORLD CONGRESS OF THE WORLD CONFEDERATION FOR PHYSICAL THERAPY, London, England, Sept. 7-12. Miss M. J. Neilson, Chartered Society of Physiotherapy, Tavistock House, South, Tavistock Square, London, W.C.1, England, Secretary.

WORLD MEDICAL ASSOCIATION, The Hague, Netherlands, Aug. 31-Sept. 7. Dr. Louis H. Bauer, 2 East 103d St., New York 29, N. Y., Secretary-General.

EXAMINATIONS AND LICENSURE

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II.* All centers where there are five or more candidates. June 22-24 and Sept. 8-10 (Part I only). Candidates may file applications at any time, but the National Board must receive them at least six weeks before the date of the examination they wish to take. *Part III.* June 9-26. Examination will be held in each of 31 centers having five or more eligible candidates. Exec. Sec., Dr. John P. Hubbard, 133 South 36th St., Philadelphia 4.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Written.* Various locations, July 16. Final date for filing applications was January 17. Sec., Dr. C. B. Hickcox, 80 Seymour St., Hartford 15.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: All candidates must now pass a written examination. *Written.* Various centers, Sept. 3. *Oral.* Philadelphia, Oct. 16-18. To be eligible, candidate must complete 36 months of training before Oct. 1. Final date for filing applications was May 1. Exec. Sec., Miss Janet Newkirk, 66 East 66th St., New York 21.

AMERICAN BOARD OF INTERNAL MEDICINE: *Oral.* San Francisco, Sept. 28-30, Chicago, Nov. 30-Dec. 2. The closing date for acceptance of applications for the San Francisco and Chicago oral examination was April 1. *Written.* October 19. The closing date for acceptance of applications was May 1. Exec. Sec.-Treas., Dr. William A. Werrell, 1 West Main St., Madison 3.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: *Oral.* New Haven, October. Final date for filing application is July 1. Sec., Dr. Leonard T. Furlow, Washington University School of Medicine, Kingshighway and Euclid Ave., St. Louis.

AMERICAN BOARD OF OPHTHALMOLOGY: Chicago, Oct. 5-9. *Written.* Various Centers, January 1954. Final date for filing applications is July 1. Sec., Dr. Edwin B. Dunphy, 56 Ivie Road, Cape Cottage, Maine.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Chicago, January 1954. Final date for filing application is August 15. Sec., Dr. Harold A. Sofield, 122 S. Michigan Ave., Chicago 3.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral.* Chicago, Oct. 5-9. Sec., Dr. Dean M. Lierle, University Hospital, Iowa City.

AMERICAN BOARD OF PEDIATRICS: *Oral.* Ann Arbor, June 26-27. Place undecided, Oct. 9-11 (tentative); Indianapolis, November. Exec. Sec., Dr. John McK. Mitchell, 6 Cushman Road, Rosemont, Pa.

AMERICAN BOARD OF PLASTIC SURGERY: Final date for receipt of case reports for the fall examination (October-November) is June 1 of each year. Corres. Sec., Mrs. Estelle E. Hillerich, 4647 Pershing Ave., St. Louis 8, Mo.

AMERICAN BOARD OF PROCTOLOGY: *Part II. Oral and Written. Anorectal Surgery and Proctology.* Philadelphia, Sept. 19. Sec., Dr. Louis A. Buie, 102-110 Second Ave. S.W., Rochester, Minn.

AMERICAN BOARD OF RADIOLOGY: *Oral. Radiology, Roentgenology, Diagnostic Roentgenology and Therapeutic Radiology.* Chicago, Dec. 6-11. Final date for filing application is July 1. Sec., Dr. B. R. Kirklin, 102-110 Second Ave. S.W., Rochester, Minn.

BOARD OF THORACIC SURGERY: *Written.* Various centers throughout the country, September 11. Final date for filing application is July 1. Sec., Dr. William M. Tuttle, 1151 Taylor Ave., Detroit 2.

DEATHS

Seliger, Robert Victor ⊕ Baltimore; born in New York June 16, 1900; University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1924; assistant in neurology at Johns Hopkins University School of Medicine; lecturer at the Institute for Research in Psychotherapy, Inc., New York, for the training of psychiatrists on the subject of alcoholism; member of the American Association for the Advancement of Science, Southern Psychiatric Association, American Psychosomatic Society, American Psychiatric Association, American Psychopathological Association, and the Association for Research in Nervous and Mental Diseases; president of the Medical Correctional Association and executive director of the National Committee on Alcohol Hygiene; in 1951 appointed medical consultant to the Canadian National Committee for Education on Alcoholism, Inc., of Montreal; member of the committee on Crime Prevention of the American Prison Association; served as chief psychiatrist of the Neuropsychiatric Institute of Baltimore, visiting psychiatrist, the Seton Institute, and consulting neurologist, James Lawrence Kernan Hospital; medical director of the Farm for Patients with Alcohol Problems; co-author of "Alcoholics Are Sick People"; editor of "Psychiatry for You"; co-editor of "Handbook of Correctional Psychology"; formerly member of the editorial staff of *Alcohol Hygiene;* died April 24, aged 52, of cerebral hemorrhage.

Evans, John Norris ⊕ Brooklyn; born in Brooklyn in 1891; Long Island College Hospital, Brooklyn, 1916; professor emeritus of ophthalmology at the State University of New York College of Medicine at New York City, formerly known as the Long Island College of Medicine, where he was professor of clinical ophthalmology for many years; member of the American Academy of Ophthalmology and Otolaryngology, American Ophthalmological Society, and the Association for Research in Ophthalmology; fellow of the American College of Surgeons; a contract surgeon for the Army during World War I; held medals from Long Island College of Medicine and the University of Buffalo; author of "Clinical Scotometry"; associate editor of *Quarterly Review of Ophthalmology;* consultant ophthalmologist to the Ophthalmological Foundation; affiliated with Brooklyn Eye and Ear Hospital, Long Island College Hospital, and Brooklyn Hospital, where he died April 9, aged 62, of cardiovascular renal disease.

Shivers, George Clausman ⊕ Colorado Springs, Colo.; born in Greenville, Miss., Nov. 14, 1905; University of Colorado School of Medicine, Denver, 1930; certified by the National Board of Medical Examiners; fellow of the International College of Surgeons and the American College of Surgeons; treasurer and member of the board of trustees of the Colorado State Medical Society for five and one-half years; since 1936 secretary of the American Goiter Association; for several years a member and once president of the local board of education; served during World War II; formerly chief of staff of Memorial (Beth-El) Hospital and active on the staffs of the Glockner-Penrose and St. Francis hospitals; died April 11, aged 47, of coronary occlusion.

Fetterman, Joseph L. ⊕ Cleveland; born in Maltz, Russia, March 20, 1897; Western Reserve University School of Medicine, Cleveland, 1921; formerly on the faculty of his alma mater; specialist certified by the American Board of Psychiatry and Neurology; member of the American Psychiatric Association, Association for Research in Nervous and Mental Diseases, and the Central Neuropsychiatric Association; served during World War II; affiliated with Windsor Hospital in Chagrin Falls, Glenville Hospital, and Huron Road Hospital; director of the Fetterman Clinic; author of the "Spinal Column," "The Mind of the Injured Man," and "Practical Lessons in Psychiatry"; died in Lakeside Hospital April 12, aged 56, of malignancy of the large intestine.

⊕ Indicates Member of the American Medical Association.

Murphy, Frank Patrick ⊕ Omaha; John A. Creighton Medical College, Omaha, 1915; associate professor emeritus of obstetrics and gynecology at his alma mater; specialist certified by the American Board of Obstetrics and Gynecology; affiliated with the Veterans Administration; member of the Central Association of Obstetricians and Gynecologists; wrote four books on medicine, including a translation of Dr. Semmelweis' book "The Concept, Etiology and Prevention of Childbed Fever"; examining physician for Union Pacific Railroad Company; died March 23, aged 62, of coronary heart disease.

Cleary, Robert Madden ⊕ Buffalo; University of Michigan Medical School, Ann Arbor, 1920; specialist certified by the American Board of Orthopaedic Surgery; member of the American Academy of Orthopaedic Surgeons; assistant professor of orthopedic surgery at the University of Buffalo School of Medicine; served during World War I; affiliated with J. N. Adam Memorial Hospital in Perrysburg, Edward J. Meyer Memorial Hospital, Children's Hospital, Crippled Childrens Guild, and the Buffalo General Hospital, where he died April 5, aged 59, of massive gastrointestinal hemorrhage.

Childress, Harmon Jay ⊕ Gilmer, Texas; born in Coffeeville, Texas, Oct. 23, 1879; Medical Department of Tulane University of Louisiana, New Orleans, 1909; served on the school board, as county health officer, county medical examiner for the local draft board during World War I, and a member of the state board of health; many times a president of the Upshur County Medical Society; president of the Farmers and Merchants National Bank of Gilmer, of which he was on the board of directors; owner of the Oaklawn Sanitarium; died Jan. 8, aged 73, of carcinoma of the pancreas.

Turbert, Edward Joseph ⊕ Hartford, Conn.; born March 16, 1881; Baltimore Medical College, 1904; fellow of the American College of Physicians; past president of the Hartford Medical Society; chief of medical department and attending physician, St. Francis Hospital; consulting physician, Manchester (Conn.) Memorial, Mount Sinai, and Hartford City hospitals and Institute of Living; member of the board of directors of the Park Street Trust Company; died in New England Deaconess Hospital, Boston, April 3, aged 72, of bronchogenic carcinoma and duodenal ulcer.

Moe, Russell James ⊕ Duluth, Minn.; born in St. James, Minn., April 21, 1902; University of Minnesota Medical School, Minneapolis, 1928; specialist certified by the American Board of Obstetrics and Gynecology; member of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons and the Central Association of Obstetricians and Gynecologists, of which he was past president; on the staffs of the Miller Memorial Hospital, St. Luke's Hospital, and St. Mary's Hospital, where he died March 8, aged 50, of cerebral metastases due to bronchogenic carcinoma.

Gibson, Frank Chester ⊕ Edmonds, Wash.; born in Arrington, Kan., Sept. 28, 1883; Chicago College of Medicine and Surgery, 1912; fellow of the American College of Surgeons; past president of the Idaho State Medical Association and formerly member of the Idaho State Board of Medical Examiners; fellow of the American College of Surgeons; served on the staff of the VA Hospital in Vancouver; at one time medical superintendent of the Bovil (Idaho) Hospital and the Potlatch (Idaho) Hospital; died March 1, aged 69, of carcinoma of the intestine.

Allen, Frank Duane ⊕ Richville, N. Y.; University of the City of New York Medical Department, New York, 1885; for many years health officer and county coroner; died Feb. 15, aged 92.

Anderson, Joseph D., Henderson, Tenn.; University of Tennessee Medical Department, Nashville, 1903; died Feb. 24, aged 75, of carcinoma of the prostate.

Andrews, Henry James ✠ Pacific Palisades, Calif.; Northwestern University Medical School, Chicago, 1907; formerly health officer of Hollywood; for many years on the staff of the Presbyterian Hospital in Los Angeles; served as director of the Los Angeles County Museum; died Feb. 28, aged 74.

Andrews, Judson M. ✠ Wharton, Texas; Memphis (Tenn.) Hospital Medical College, 1894; an Associate Fellow of the American Medical Association; died Feb. 2, aged 88, of cerebral hemorrhage.

Bandler, Morton Moe ✠ Wingdale, N. Y.; Université de Lausanne Faculté de Médecine, Switzerland, 1938; supervising psychiatrist at the Harlem Valley State Hospital; died in Sharon (Conn.) Hospital Jan. 5, aged 44, of coronary thrombosis.

Barron, David, Brockton, Mass.; Tufts College Medical School, Boston, 1921; formerly city health officer; affiliated with Brockton Hospital; died March 4, aged 55, of coronary heart disease.

Bennett, Forrest McLean, Richmond, Va.; Medical College of Virginia, Richmond, 1914; died Feb. 14, aged 64, of cardiac failure and arteriosclerosis.

Brannon, Earl Holt ✠ Bridgeport, W. Va.; University of Maryland School of Medicine, Baltimore, 1906; affiliated with St. Mary's Hospital in Clarksburg; died in Big Spring, Texas, March 29, aged 72, of coronary thrombosis.

Brooks, John Dosher, Asheville, N. C.; Georgetown University School of Medicine, Washington, D. C., 1895; served overseas during World War I; later affiliated with the Veterans Administration and was on the staffs of VA hospitals in Whipple, Ariz., Excelsior Springs, Mo., and Oteen, N. C.; died in the VA Hospital in Swannanoa Feb. 26, aged 80, of coronary thrombosis.

Bruder, Andrew Joseph, Jersey City, N. J.; Georgetown University School of Medicine, Washington, D. C., 1910; died March 17, aged 71, of chronic endocarditis and chronic arthritis.

Caruso, Gerard, Newark, N. J.; University and Bellevue Hospital Medical College, New York, 1925; died March 22, aged 57, of myocardial infarction.

Cason, Charles W., Belton, S. C.; University of Georgia Medical Department, Augusta, 1889; formerly practiced in Hodges, where he was mayor and member of the school board of trustees; died Jan. 30, aged 96, of myocarditis.

Cass, Frank Ozro ✠ Provincetown, Mass.; Boston University School of Medicine, 1909; past president of the Barnstable County Medical Society; formerly member of the school board; died in Needham Feb. 22, aged 69.

Castro, Herman Rawson, New York City; George Washington University School of Medicine, Washington, D. C., 1921; affiliated with Bellevue and Kings County hospitals; died Jan. 2, aged 54, of coronary thrombosis.

Cauble, William Commodore, Akron, Ohio; University of Louisville (Ky.) Medical Department, 1901; served during World War I; died March 27, aged 78, of acute gangrenous cholecystitis.

Chalmers, James Scott ✠ Sand Springs, Okla.; University of Virginia Department of Medicine, Charlottesville, 1926; member of the Industrial Medical Association; fellow of the International College of Surgeons; medical director of the Bethlehem Supply Company in Tulsa; affiliated with St. John's Hospital in Tulsa, where he died March 22, aged 57, of cerebral hemorrhage.

Chiasson, Marcellin Jean, Lyons, Ill.; Loyola University School of Medicine, Chicago, 1916; affiliated with MacNeal Memorial Hospital in Berwyn; died April 4, aged 70, of pulmonary embolism.

Coffin, Guy Rupert, Monticello, Ind.; Indiana University School of Medicine, Indianapolis, 1908; formerly mayor; served during World War I; died in St. Elizabeth Hospital, Lafayette, March 4, aged 78, of paralysis agitans.

Cohen, Herman N. ✠ Hoboken, N. J.; New York Homeopathic Medical College and Flower Hospital, New York, 1917; served during World War I; died March 16, aged 62, of coronary thrombosis.

Connolly, Richard Newman ✠ Newark, N. J.; University of the City of New York Medical Department, New York, 1893; member of the American Public Health Association; past president of the Essex County Medical Society; served as professor of bacteriology at Rutgers University of New Brunswick; formerly bacteriologist for the city board of health; died March 25, aged 90, of carcinoma.

Cox, Harold Bailey ✠ Indianapolis; Indiana University School of Medicine, Indianapolis, 1910; died March 18, aged 68, of coronary arteriosclerosis.

Crombie, Francis Joseph ✠ North St. Paul, Minn.; University of Minnesota Medical School, Minneapolis, 1931; served on the staff of St. John's Hospital in St. Paul; died March 9, aged 48, of coronary thrombosis.

Cullipher, Jeremiah Edward ✠ Elwood, Ind.; Medical College of Indiana, Indianapolis, 1903; affiliated with Mercy Hospital, where he died Feb. 20, aged 79, of intestinal obstruction.

Dansky, Nathan, Los Angeles; Creighton University School of Medicine, Omaha, 1919; affiliated with the Los Angeles County Hospital; died in Glendale Feb. 26, aged 57, of coronary thrombosis.

Davis, George Henry ✠ Kirkland, Wash.; College of Physicians and Surgeons of San Francisco, 1905; an Associate Fellow of the American Medical Association; served as deputy coroner of King County, and as a member of the state board of medical examiners; owner of the Kirkland General Hospital; died in Seattle March 5, aged 75, of uremia.

Davis, Llewellyn Farnum, Washington, D. C.; National University Medical Department, Washington, D. C., 1895; also a dentist; died April 10, aged 77, of myelogenous leukemia.

DeWolf, Charles Livingstone ✠ Chicora, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1902; served on the staff of the Butler County Memorial Hospital in Butler; died Feb. 25, aged 75, of cerebral hemorrhage.

Diss, Charles Joseph ✠ Ilion, N. Y.; Long Island College Hospital, Brooklyn, 1901; past president of the Herkimer County Medical Society; affiliated with Ilion Hospital; died Feb. 10, aged 72, of myocarditis.

Donnelly, Francis John ✠ North Lake, Wis.; Northwestern University Medical School, Chicago, 1891; an Associate Fellow of the American Medical Association; died Feb. 1, aged 89, of acute pyelonephrosis.

Dorning, John ✠ New York City; University of the City of New York Medical Department, New York, 1882; member of the American Pediatric Society; affiliated with St. Francis Hospital; died April 13, aged 93.

Doten, Arthur Chapman ✠ Worcester, Mass.; Long Island College Hospital, Brooklyn, 1899; served as surgeon for the police department; died March 3, aged 76, of generalized arteriosclerosis.

Eaton, Arthur Theodorus ✠ Haddon Heights, N. J.; Medico-Chirurgical College of Philadelphia, 1912; served on the staff of the Cooper Hospital in Camden; died in Camden April 3, aged 70, of coronary infarction.

Farris, Hansford Lee ✠ Tulsa, Okla.; Medico-Chirurgical College of Philadelphia, 1900; fellow of the American College of Surgeons; affiliated with Hillcrest Memorial Hospital and St. John's Hospital; chief physician for the Douglas Aircraft Company; died April 10, aged 77.

Fine, Henry Masten, San Diego, Calif.; Medical Department of the University of California, San Francisco, 1898; served during World War I, and as a past assistant surgeon in the U. S. Public Health Service Reserve; at various times affiliated with VA hospitals in Camp Kearney, Calif., San Fernando, Calif., Summount, N. Y., and Walla Walla, Wash.; superintendent of the San Diego County Hospital from 1943 to 1948; died March 15, aged 80, of arteriosclerotic heart disease.

Foster, Harold Alfred ✠ New York City; New York Homeopathic Medical College and Hospital, 1905; fellow of the American College of Surgeons; formerly on the faculty of his alma mater; affiliated with Medical Arts Center Hospital and Flower and Fifth Avenue Hospitals in New York; served on the staffs of the Montclair Community Hospital in Montclair, N. J., and the East Orange General Hospital in East Orange, N. J.; died in Montclair, N. J., April 4, aged 72, of acute myocardial infarction.

Frasch, William Frederick ✠ Rochester, N. Y.; University of Buffalo School of Medicine, 1902; associated with Park Avenue Hospital; also a poet; died April 11, aged 78.

Gantz, Sue Blanche Humeston, Albia, Iowa; Woman's Medical College, Kansas City, Mo., 1897; died in the Smith Hospital March 23, aged 84.

Gerish, Albert Ernest, Omaha; College of Physicians and Surgeons, Medical Department of the Kansas City University, 1903; died in Clarkson Hospital March 28, aged 81, of congestive heart failure.

Getson, Philip, Philadelphia; Temple University School of Medicine, Philadelphia, 1914; for a time medical inspector for the Philadelphia public school system; affiliated with Mount Sinai, Graduate, and Northern Liberties hospitals; served as associate editor of *American Physician;* died April 4, aged 69, of hypertensive heart disease.

Giles, George Clifton ✠ Oakland, Iowa; Queen's University Faculty of Medicine, Kingston, Ontario, Canada, 1893; died Jan. 21, aged 83, of cirrhosis of the liver and mitral insufficiency.

Goble, Charles Archie ✠ Jeannette, Pa.; the Hahnemann Medical College and Hospital, Chicago, 1916; a captain in the medical corps of the Army during World War I; served as physician for the schools in Jeannette, and on the staff of the Westmoreland Hospital in Greensburg; a director of the Glass City Bank of Jeannette; died in Victoria Hospital, London, Ontario, Canada, March 24, aged 61, of carcinoma of the throat and lungs.

Goodman, Walter George, Hershey, Pa.; Jefferson Medical College of Philadelphia, 1915; for many years physician for the Pennsylvania Railroad; died March 25, aged 72.

Griffin, William Flournoy, Watonga, Okla.; Medical Department of Tulane University of Louisiana, New Orleans, 1908; died March 4, aged 73, of coronary occlusion.

Grodinsky, Manuel, Omaha; University of Nebraska College of Medicine, Omaha, 1920; associate professor of anatomy and surgery at his alma mater; member of the founders group of the American Board of Surgery; member of the American Association of Anatomists; affiliated with Lutheran, Nebraska Methodist, Children's Memorial, and University of Nebraska hospitals; died March 31, aged 56, of progressive muscular dystrophy.

Gruenspecht, Adolfe ✠ New York City; Georg August-Universität Medizinische Fakultät, Göttingen, Prussia, Germany, 1910; served on the staff of the Hospital for Joint Diseases; died in Sydenham Hospital Feb. 8, aged 71, of a heart attack.

Hardin, Claud Everett ✠ Modesto, Calif.; College of Medical Evangelists, Loma Linda and Los Angeles, 1930; formerly practiced in Oswego, Kan., where he was county health officer; died in New York City March 3, aged 59.

Hartman, Matthew A., New York City; Fordham University School of Medicine, New York, 1920; affiliated with French Hospital, where he died March 14, aged 56, of cardiac failure.

Hathaway, Robert Meredith ✠ Hamilton, Ill.; Drake University College of Medicine, Des Moines, 1909; affiliated with the Memorial Hospital in Carthage, St. Joseph's Hospital, and Graham Hospital in Keokuk, Iowa, where he died April 1, aged 70, of acute myocardial infarction.

Heffelfinger, Miles Akin, Los Angeles; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1904; served during World War I; died Feb. 5, aged 72.

Keever, Benjamin Winston Dudley, Centerville, Ohio; Miami Medical College, Cincinnati, 1884; died Feb. 17, aged 93, of coronary thrombosis.

Kissane, John William ✠ Malone, N. Y.; McGill University Faculty of Medicine, Montreal, Canada, 1903; affiliated with Alice Hyde Hospital, where he died April 2, aged 74, of bronchogenic carcinoma.

Kline, Walter Lee, Friendship Heights, Md.; Columbia University College of Physicians and Surgeons, N. Y., 1898; at one time coroner of Montgomery County, Ohio; served during World War I; formerly chief medical officer of the regional office in Washington, D. C.; died in Mount Alto Hospital, Washington, D. C., April 4, aged 81, of ruptured aneurysm of the abdominal aorta.

Lewis, William Frank, Utica, Ohio; Ohio Medical University, Columbus, 1900; died Feb. 22, aged 81, of congestive heart failure.

Litt, Sol ✠ Chicago; Rush Medical College, Chicago, 1926; specialist certified by the American Board of Obstetrics and Gynecology; member of the Central Association of Obstetricians and Gynecologists; fellow of the American College of Surgeons; affiliated with Michael Reese Hospital, where he died April 6, aged 53, of carcinoma of the pancreas.

Longstreet, Martha L. ✠ Saginaw, Mich.; born in Erie, Pa., April 27, 1870; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1904; member of the consulting staffs of St. Luke's, St. Mary's, and Saginaw General hospitals; in 1938 was designated "Michigan's most outstanding woman" by the Grand Rapids Inter-Club Council of Business Women; in 1940 elected an honorary director of the Saginaw Chamber of Commerce; died Feb. 26, aged 82.

Marsh, Hanson H., Seven Mile, Ohio; Medical College of Ohio, Cincinnati, 1903; past president of the Butler County Board of Health; affiliated with Mercy Hospital in Hamilton; died in Wilmington Jan. 15, aged 76, of gastric ulcer.

Miller, Charles Francis, Chester, Pa.; Baltimore Medical College, 1894; died in Darlington Sanitarium, West Chester, Feb. 27, aged 85, of pneumonia and cardiac decompensation.

Miller, Richard Jasper, Kincaid, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1910; served overseas during World War I; later on the high school board; died in Memorial Hospital, Springfield, Feb. 8, aged 67.

Moje, Herman Albertus, Chicago; National Medical University, Chicago, 1907; died in the Kenner Hospital April 11, aged 66, of carcinoma of the intestine and chronic myocarditis.

Moore, Daniel Virgil, Sioux City, Iowa; John A. Creighton Medical College, Omaha, 1905; died Feb. 7, aged 73, of congestive heart failure and lobar pneumonia.

Murphy, John Patrick Jr. ✠ St. Louis; St. Louis University School of Medicine, 1928; specialist certified by the American Board of Orthopaedic Surgery; senior instructor in orthopedic surgery at his alma mater; affiliated with St. Mary's Group of Hospitals, St. Louis City Hospital, St. John's Hospital, and the Alexian Brothers' Hospital; died March 25, aged 51, of coronary occlusion.

Nelligan, Thomas Hayes ✠ Pittsfield, Mass.; Harvard Medical School, Boston, 1921; past president of the Berkshire Medical Society; member of the New England Obstetric and Gynecologic Society; fellow of the American College of Surgeons; on the staffs of the Pittsfield General Hospital, Hillcrest Hospital, and St. Luke's Hospital, where he died March 30, aged 58, of ruptured dissecting aneurysm of the ascending arch of the aorta.

Newman, Oscar Clarence ✠ Shattuck, Okla.; University of the South Medical Department, Sewanee, Tenn., 1900; Medical College of Ohio, Cincinnati, 1906; fellow of the American College of Surgeons; at one time secretary of the board of examiners in the basic sciences; in 1943 was inducted into the Hall of Fame of the Oklahoma Historical Society; owner of

the Newman Memorial Hospital; for many years member of the state board of medical examiners; died March 14, aged 76, of chronic nephritis and cirrhosis of the liver.

Parker, Prentiss Edward ⊕ Johnson City, Tenn.; Medical Department of Tulane University of Louisiana, New Orleans, 1910; an Associate Fellow of the American Medical Association; died recently, aged 68, of hypertensive heart failure.

Pastoral, Aquilino Callanta, Dagupan, Pangasinan, Philippines; University of Santo Tomas College of Medicine and Surgery, Manila, 1940; exchange student at the New York Eye and Ear Infirmary in New York; died in Nashville, Tenn., April 12, aged 37, after suffering a cerebral hemorrhage on an airplane flying between Tulsa, Okla., and Nashville.

Patterson, Denver Harry ⊕ Cleveland; Cleveland Homeopathic Medical College, 1901; on the staff of the Huron Road Hospital, where he died April 2, aged 75, of pulmonary embolism and bilateral phlebothrombosis.

Pipkin, Walter D. ⊕ Monroe City, Mo.; St. Louis University School of Medicine, 1904; an Associate Fellow of the American Medical Association; affiliated with St. Elizabeth's and Levering hospitals in Hannibal; died April 1, aged 76, of heart failure.

Pozdena, Otto Rudolf ⊕ Jackson Heights, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1905; for many years assistant director of the bureau of records of the health department and medical examiner for the Metropolitan Life Insurance Company; died April 19, aged 70.

Prendergast, Francis Aloysius, New York City; Long Island College Hospital, Brooklyn, 1903; died March 28, aged 73, of cancer.

Quarrier, Sidney Sayre ⊕ Hartford, Conn.; Columbia University College of Physicians and Surgeons, New York, 1932; specialist certified by the American Board of Surgery; certified by the National Board of Medical Examiners; member of the New England Surgical Society; on the visiting staffs of the Hartford Hospital and the Institute of Living; consulting surgeon, Cyril and Julia C. Johnson Memorial Hospital, in Stafford Springs; died in West Hartford March 24, aged 46, of carcinoma of the rectum.

Reid, David William ⊕ Mill City, Ore.; Medico-Chirurgical College of Kansas City, Mo., 1900; local surgeon for Southern Pacific Railroad; affiliated with Salem (Ore.) Memorial Hospital; died in Holladay Park Hospital, Portland, March 8, aged 76, of cerebral thrombosis and hypostatic pneumonia.

Robilotti, Joseph Gerard ⊕ New York City; Loyola University School of Medicine, Chicago, 1932; for many years medical examiner for the U. S. Immigration and Naturalization Service; served on the staffs of the Bellevue, Roosevelt, and New York Post-Graduate hospitals; affiliated with St. Vincent's Hospital, where he died March 26, aged 50, of cirrhosis of the liver and arteriosclerotic heart disease.

Robinson, Arthur Letchford ⊕ Burr Oak, Mich.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1902; fellow of the American College of Surgeons; served on the staffs of the Community Health Center in Coldwater and the Sturgis (Mich.) Memorial Hospital; at one time physician in charge of the John Robinson Hospital in Allegan; died in Orange, Calif., Feb. 17, aged 79, of pulmonary embolism and acute appendicitis.

Ross, Elizabeth ⊕ Pictou, Nova Scotia, Canada; Boston University School of Medicine, 1912; specialist certified by the American Board of Pathology; member of the Massachusetts Medical Society, College of American Pathologists, and the American Society of Clinical Pathologists; for many years pathologist at Shadyside Hospital in Pittsburgh; died April 16, aged 81.

Runyon, Chandler Preston, Elwood, Ind.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1900; died March 28, aged 80.

Rynearson, William John ⊕ Fenton, Mich.; Detroit College of Medicine, 1912; died April 12, aged 65.

Schoen, William Aaron, Cape Girardeau, Mo.; Homeopathic Medical College of Missouri, St. Louis, 1898; died Feb. 25, aged 76, of myocardosis.

Schuitema, Donald Milo ⊕ Grand Rapids, Mich.; Rush Medical College, Chicago, 1936; specialist certified by the American Board of Obstetrics and Gynecology; served during World War II; affiliated with St. Mary's Hospital, Butterworth Hospital, and the Blodgett Memorial Hospital, where he died March 7, aged 44, of cardiac insufficiency and essential hypertension.

Schuller, Francis Xavier ⊕ Huntington, W. Va.; Medical College of Virginia, Richmond, 1915; resigned in 1950 after serving as county coroner for 21 years; died April 17, aged 72, of a heart attack.

Silvers, James Monroe ⊕ Muncie, Ind.; Medical College of Indiana, Indianapolis, 1904; died Feb. 18, aged 80, of hemorrhage from the right lenticulostriate artery.

Sink, Frank Gordon ⊕ Tucson, Ariz.; University of Arkansas School of Medicine, Little Rock, 1935; member of the Indiana State Medical Association; formerly practiced in Remington, Ind., and was on the staffs of the Home Hospital and St. Elizabeth Hospital in Lafayette, Ind.; served during World War II; died March 10, aged 43, of chronic hepatitis.

Smith, Franklin Charles ⊕ Mount Ayr, Iowa; Hospital College of Medicine, Louisville, Ky., 1893; died Jan. 20, aged 85, of heart failure.

Smith, Philip Weber ⊕ Blackcreek, Wis.; University of Wisconsin Medical School, Madison, 1937; served during World War II; on the staff of St. Elizabeth Hospital in Appleton; village health officer; died in Community Hospital, New London, Jan. 20, aged 39, of injuries received in an automobile accident.

Steele, Albert Edward ⊕ Boston; Harvard Medical School, Boston, 1900; specialist certified by the American Board of Pathology; member of the American Association of Pathologists and Bacteriologists, American Heart Association, and the College of American Pathologists; served on the staffs of the Worcester (Mass.) City Hospital, Lawrence Memorial Hospital in Medford, and Boston City, Carney, and Massachusetts General hospitals; died March 29, aged 75, of carcinoma.

Steiner, Samuel ⊕ Philadelphia; Medico-Chirurgical College of Philadelphia, 1899; affiliated with the Albert Einstein Medical Center; died March 13, aged 77, of cerebral hemorrhage.

Tetelman, Michael Martin ⊕ New York City; Cornell University Medical College, New York, 1924; fellow of the American College of Surgeons; surgeon for the department of athletics, New York University; college physician at the University Heights campus, New York University; served overseas during World War I; affiliated with St. Barnabas Hospital for Chronic Diseases and the French Hospital; died in Bradenton, Fla., March 30, aged 58, of coronary disease.

Tractenberg, Isaac S. ⊕ Brooklyn; Medical College of Virginia, Richmond, 1913; fellow of the International College of Surgeons; attending gynecologist and chief of the outpatient department, obstetrics and gynecology, Unity Hospital, where he was vice-president and president-elect of the medical board; died in Lawrence, Long Island, N. Y., Feb. 27, aged 66, of acute coronary occlusion.

Wachowiak, Marion ⊕ St. Joseph, Mo.; St. Louis University School of Medicine, 1922; formerly on the faculty of his alma mater; affiliated with State Hospital No. 2; died April 2, aged 71, of cerebral vascular accident.

Wills, John Walter, Palo Alto, Calif.; Tulane University of Louisiana School of Medicine, New Orleans, 1917; specialist certified by the American Board of Psychiatry and Neurology; member of the American Psychiatric Association; served during World War II; for many years affiliated with VA Hospital; died March 30, aged 69.

Wilson, Mark Stanley, Marlinton, W. Va.; University of Maryland School of Medicine, Baltimore, 1903; for many years mayor; died April 27, aged 75, of coronary thrombosis.

GOVERNMENT SERVICES

AIR FORCE

New Commandant of School of Aviation Medicine.—Brig. Gen. Edward J. Kendricks has returned to Randolph Field in Texas as commandant of the Air Force institution. For four and a half years ending with the attack on Pearl Harbor, he was assigned to the school as head of the department of neuropsychiatry. A native of Michigan, he studied medicine at Northwestern University in Chicago and practiced for eight years in Detroit. At the start of World War II, he spent four months in Washington; then he was appointed surgeon of the 376th Bombardment Group, which was scheduled for a highly secret operation to fly across Africa and India and bomb Tokyo from the Asiatic mainland. When this task force of 23 B-24's, arrived in Cairo in June, 1942, German Field Marshal Rommel was beginning his drive across Egypt. The detachment was held in the Middle East to support the defense of Suez. From this nucleus the Ninth Air Force was later organized, and General Kendricks became its surgeon. From the Allied invasion of Normandy until the Germans surrendered, the Ninth Air Force was General Vandenberg's tactical air arm in Europe. After the war, General Kendricks served for three years as chief of the Aero Medical Laboratory in Dayton, Ohio, developing protective devices for flyers of jet and rocket aircraft. Since 1949 he has held a medical personnel assignment in Washington. He wears the Bronze Star, the Legion of Merit with oak leaf cluster, as well as the French Legion of Honor and the Croix de Guerre with palms of France, Belgium, and Luxembourg.

First Flight Surgeon Visits School.—Thirty-five years ago Dr. Robert J. Hunter of Philadelphia was the first medical officer to serve with the "fledgeling United States Air Force as a flight surgeon." He was also one of the earliest graduates of the School of Aviation Medicine, established four months before at Mineola, N. Y. Now 71, Dr. Hunter has spent the anniversary of that historic week in revisiting the school, which has been moved to Randolph Air Force Base, Texas. Dr. Hunter, an otologist, became interested in aviation medicine when this country entered World War I in 1917. He had been working with the "whirling chair" (the Barany test), which was then used to determine the sense of equilibrium in candidates for flight training. The Army sent him first to San Antonio to organize a cadet testing unit. Lieutenant Hunter not only organized the unit but persuaded patriotic citizens of the town to pay for it. In March, 1918, he was reassigned to the aeromedical school on Long Island. The orders he received two months later were for service in the field as a flight surgeon. Thus, he became the first physician in the United States actually to perform the duties of a flight surgeon. He was preparing to go to France with the first integrated Aero Brigade of bombers, fighters, and balloons for observation when the war ended. Dr. Hunter then resumed medical practice in Philadelphia. The Flight Surgeons' Association, which he helped to found, was, in time, absorbed into the Association of Military Surgeons. In 1935 he was commissioned in the Naval Reserve for the purpose of organizing a reserve unit at the Philadelphia General Hospital. In World War II he was recalled as a lieutenant commander, but because of his age was forbidden sea duty or overseas service. Since World War II Dr. Hunter has been a consultant at the Philadelphia General Hospital, where, for a quarter of a century, he was chief of otolaryngology. A year ago, at the University of Pennsylvania, he opened the Hearing Center, of which he is director. "In my day," he said, "the Flight Surgeon was a kind of family doctor to the flyer. All that is changed now, and the Air Force can call on the services of some of the most highly trained specialists in the world. . . . But this work still requires the utmost degree of cooperation among the various specialties. It must never be forgotten that the health of men who fly is the common object of all Air Force medicine."

ARMY

Personal.—Major Gen. Edward A. Noyes (MC) retired from the service April 30 after about 38 years of active duty. His last assignment was commanding general of the Brooke Army Medical Center, Fort Sam Houston, Texas. When General Noyes graduated from the Army Medical School in 1916, he was awarded the Hoff medal as the outstanding member of the class. He was awarded the Legion of Merit during World War II and after the war was theatre surgeon in Europe until transferred to the Brooke Army Medical Center in 1948.

NAVY

Civilian Consultants Meet with Surgeon General.—The Board of Honorary Civilian Consultants to the Navy Medical Department met with the Surgeon General Rear Adm. Lamont Pugh, and other officers of the Navy Medical Department, May 14, at the Bureau of Medicine and Surgery, Washington, D. C. The honorary consultants, appointed by the Surgeon General with the approval of the Secretary of the Navy, serve a four year period and meet with the Surgeon General each year to advise him on major administrative and professional problems. Members of the board include Louis Bauer, M.D., President of the American Medical Association, Otto W. Brandhorst, D.D.S., President of the American Dental Association, four past presidents as well as presidents-elect of these organizations, and 17 other leaders in medicine, dentistry, nursing, and pharmacy. The consultants considered ways and means whereby an adequate number of physicians, dentists, and nurses may be assured to meet the needs of the Navy and Marine Corps; also the problem of medical care for the dependents of Navy and Marine Corps personnel as authorized by law if the allowance of physicians is further reduced by executive action.

VETERANS ADMINISTRATION

Hospital News.—Dr. Phillip Polatin, associate in psychiatry, College of Physicians and Surgeons of Columbia University, N. Y., addressed the hospital staff of the VA Hospital, Northport, Long Island, April 21, 1953, on "Newer Concepts in Psychiatry."——Dr. H. Houston Merritt, professor of neurology, College of Physicians and Surgeons of Columbia University, N. Y., addressed the hospital staff of the VA Hospital, Northport, Long Island, April 24, 1953, on "Newer Drugs in the Control of Epilepsy."——Dr. Louis B. Newman, chief, Physical Medicine and Rehabilitation Service, VA Hospital, Hines, Ill., addressed the staff at the Highland Park Hospital, Highland Park, Ill., April 18, on "Physical Medicine and Rehabilitation as Part of Total Medical Care."

Personal.—Dr. Harold M. Engle, Seattle, has been appointed manager of the VA Hospital at Salt Lake City, and Dr. Harrison S. Collisi, Erie, Pa., has been named manager of the tuberculosis hospital at Livermore, Calif.——Dr. Herbert Kent, chief, physical medicine and rehabilitation, VA Hospital, Indianapolis, addressed the Indiana Health Council on the "Concepts of Physical Medicine and Rehabilitation" March 16, at the Columbia Club, Indianapolis.——Dr. Martin M. Cummings, chief of tuberculosis research at the VA Hospital in Atlanta, Ga., has been appointed chief of the research division in the VA Department of Medicine and Surgery, Washington, D. C.——Dr. Morley B. Beckett, manager of the VA Hospital at Saginaw, Mich., has been appointed manager of the new 496 bed VA Hospital, in Ann Arbor, Mich., which is scheduled to be completed this summer.

FOREIGN LETTERS

BRAZIL

Immunologic Relation of Tuberculosis and Leprosy.—In a recent study, Drs. Nelson Souza Campos, José Rosenberg, and Jamil Aun reported on 40 children from 3 to 14 years old whose parents had leprosy (Hansen's disease). Five of the children were in contact with their parents for from seven months to four years, and 35 of them were isolated immediately after birth. The entire group were cared for in closed surroundings. All of these children had positive reactions to lepromin in annual Mitsuda tests; the reactions had been stable for from two and seven years. The reactions to the last lepromin test preceding the BCG vaccination were as follows: 27 children had doubtful reactions, 11 had 1+ reactions, and 2 had 2+ reactions. The result of a Mantoux test (with 1:10 tuberculin) was negative in all cases.

The factors that might have caused positive Mitsuda reactions in these children living in isolated surroundings have been considered. In spite of their nonsensitivity to tuberculin, the possibility of infection from the nurses and other personnel has been suggested.

In this study BCG was given orally in four doses of 0.2 gm. administered at weekly intervals, a total of 0.8 gm. A lepromin test was done three days after the last dose of BCG was given. Of the 27 children who had had doubtful reactions, 16 had 1+ reactions and 9 had 2+ reactions. The reactions of two were unchanged but became positive after a second lepromin test performed 30 days later. The reaction of 8 of the 11 children whose response had been 1+ was increased to 2+ but was unchanged in the other 3; it was not possible to perform a second test on the 3 whose reaction was unchanged. In the two cases in which the reaction was 2+ before the vaccination, it did not show any later variation, as was to be expected. Thus, oral BCG vaccination given by the technique described here, was capable of intensifying the lepromin reactions in 35 of 38 cases (92.1%). Two of the five children who had been in contact with leprous adults already had 2+ reactions before the vaccination. The other three, one with a doubtful reaction and two with 1+ reactions, had their reactions intensified to 1+ and 2+ respectively.

The intensification of the Mitsuda reaction following oral vaccination with BCG has been emphasized because of Brazilian studies that have indicated that oral administration of BCG can strengthen the specific resistance to tuberculosis in organisms that have already been primarily infected. By analogy, the findings reported here could be interpreted as having resulted from strengthening of the resistance to leprous infection by BCG vaccination in persons who were already sensitive to the Mitsuda test.

CHILE

Distribution of Physicians in Chile.—Dr. C. Ribbeck, in a review of the latest census, points out that the population of Chile is 5,915,706 and that the medical population is 3,450, thus giving an average of one physician per 1,714 inhabitants. Specifically, data obtained from the various regional councils of the medical association point to the following: Antofagasta, one physician per 2,357 inhabitants; La Serena, one per 3,731; Santiago, one per 857; Talca, one per 5,208; Temuco, one per 6,271; and Valparaíso, one per 1,815. There is a great concentration of physicians in the province of Santiago, but generally Chile has a deficit of about 3,000 physicians.

Kellogg Foundation.—Dr. Benjamin G. Horning, representative of the Kellogg Foundation, recently met in Santiago with the physicians, nurses, and sanitary engineers who were awarded scholarships by the foundation. The meeting was held in the Chilean-North American Cultural Institute and was attended by members of the U. S. embassy and medical personalities. The foundation has, since its creation in 1933, given to Chileans 84 scholarships out of a total of 600. Dr. Horning explained that the foundation has its headquarters in Battle Creek, Mich., and carries the name of a great American benefactor and philanthropist.

Obstetrics.—Professor Aviles, of the maternity ward of the Hospital Salvador, published a monograph on its activity during the years 1949-1951. A study of the statistics clearly shows the enormous progress in obstetrics during the last few years. Antibiotics and blood transfusions were the factors that contributed, to a great extent, to the decrease in mortality. Thus, in 1937 the neonatal mortality was 5.2 for every 100 infants born alive, dropping to 3.1 in 1951. The maternal mortality of obstetric origin was, in 1937, 18.7 per 1,000 live births and dropped to 1.7 in 1951. In 1937 for every 1,000 live births death of the mother was due to toxemia in 0.6%, anemia in 1.9%, and sepsis in 16.1%. These figures dropped in 1951 to the following levels: toxemia, 0.2%; anemia, 0.8%; and sepsis, 0.8%. The author comments on the processes that underwent the greatest changes in the last few years in Chile. Thus, for the diagnosis of pregnancy the Friedman test is now favored. The frequency of vomiting during pregnancy has greatly decreased. In spite of the fact that its etiology is still unknown, diet, rest, and sedation together with antihistaminics and pyridoxine have brought the patients great relief. The frequency of habitual abortion has diminished owing to early administration of progesterone in doses of 200 to 300 mg. Lately estrogenic hormones were used either alone or in combination with progesterone and gave good results. Bed rest and the administration of opium derivatives are also associated in the treatment.

The author mentions that the anesthesia à la reine (chloroform used for analgesia only) is well tolerated when well administered, even in cases of cardiac, renal, and tuberculous patients. Cyclopropane and other gases that were given in cases of cesarean section have the disadvantage of producing abundant bleeding in the operative zone. The author prefers spinal anesthesia in cases of cesarean section. Saddle block anesthesia is also widely used and has given good results. Professor Aviles believes in shortening the expulsive period, and for many years he has used the following method: 5 to 10 units of posterior hypophysis extract is given intravenously, after the patient has been given a general anesthesia and there is complete dilatation of neck of the cervix in cases of vertex presentations and in those in which a normal relation between the pelvis and the fetus is known to exist.

The frequency of syphilis has decreased to a great extent owing to the epidemiological criteria adopted by the sanitary authorities. Thus, in 1937, 9.9% of the patients in the maternity ward had maternal syphilis and 10.6% congenital syphilis. These figures dropped in 1951 to 2.1% with maternal syphilis and 1.3% with congenital syphilis. Professor Aviles states that pregnancy does not necessarily aggravate the lesions of pulmonary tuberculosis. The destiny of these patients depends on factors foreign to pregnancy. The author is much against the therapeutic interruption of pregnancy in cases of pulmonary tuberculosis. His experience tends to show that in cases of inactive or stationary, or even in cases of minimal, lesions, only general measures of hygiene and diet are necessary. On the other hand, moderate or advanced processes require drug therapy also. In cardiac cases, great changes in criteria have come to pass, and today, owing to a better understanding of the hemodynamic problems of the patient and the restriction of salt, these patients go through pregnancy and labor easily.

During the year 1937 the physicians at the maternity ward attended 3,239 labors. Forceps was applied in 2.4%, internal versions were performed in 1.9%, and cesarean sections done in 1.1%. In 1951 the figures were 5,277 labors attended in the maternity ward, 4.5% using forceps, 4.2% internal versions, and 4.1% cesarean sections.

The items in these letters are contributed by regular correspondents in the various foreign countries.

LONDON

Isoniazid in Pulmonary Tuberculosis.—The second report of the Medical Research Council's Tuberculosis Chemotherapy Trials Committee on isoniazid in the treatment of pulmonary tuberculosis (*Brit. M. J.* **1**:521, 1953) is based on the findings in 364 patients after three months' treatment. Three forms of treatment were used: 142 patients were treated with streptomycin (1 gm. daily) and isoniazid (100 mg. twice daily); 102 with streptomycin (1 gm. daily) and *p*-aminosalicylic acid (5 gm. four times daily); and 120 with isoniazid (100 mg. twice daily) alone. The criteria for acceptance of a patient for inclusion in the trial were as follows: 1. Tubercle bacilli had to be demonstrated. 2. The tubercle bacilli could not be streptomycin-resistant or *p*-aminosalicylic acid-resistant. 3. The patient could not have had more than 15 gm. of streptomycin and/or 300 gm. of *p*-aminosalicylic acid within the previous three months, and not more than 3 gm. of isoniazid at any time. 4. The patient could not be undergoing pneumoperitoneum nor have any collapse therapy for the lung requiring treatment. Patients so selected were divided into three groups: group 1, patients with acute rapidly progressive disease of recent origin (excluding those with bilateral disease who were between the ages of 15 and 30); group 2, patients with other forms suitable for chemotherapy; and group 3, those with a chronic disease considered unlikely to respond to chemotherapy.

The findings at the end of three months were as follows: The general condition of the majority of patients had improved, and the difference in the three groups in this respect were small. The average gains in weight were 13 lb. (5.9 kg.) for those who were given streptomycin and isoniazid, 6 lb. (2.7 kg.) for those who had streptomycin and *p*-aminosalicylic acid, and 13 lb. for those given isoniazid alone. Temperatures of febrile patients fell to normal in 82% of those receiving streptomycin and isoniazid, in 76% of those receiving streptomycin and *p*-aminosalicylic acid, and in 68% of those receiving isoniazid. In patients with sedimentation rates of 21 or more before treatment, the rate fell to 10 or less in 45% of those receiving streptomycin and isoniazid, 21% of those receiving streptomycin and *p*-aminosalicylic acid, and in 25% of those receiving isoniazid. Two plus or three plus radiographic improvement was seen in 38% of those receiving streptomycin and isoniazid, in 31% of those receiving streptomycin and *p*-aminosalicylic acid, and in 23% of those receiving isoniazid. The proportions of patients bacteriologically negative, both on direct examination and on culture, at a single examination at three months were 67% of those receiving streptomycin and isoniazid, 55% of those receiving streptomycin and *p*-aminosalicylic acid, and 37% of those receiving isoniazid. Bacillary resistance to isoniazid was found in 62% of culture-positive isoniazid-treated patients at the end of three months, compared with only 13% of similar streptomycin-isoniazid patients. Bacillary resistance to streptomycin was found in 11% of the streptomycin-isoniazid patients. No serious toxic effects from isoniazid were noted in any of the patients.

The committee's main conclusions are as follows: "None of the three drugs, isoniazid, streptomycin, or P.A.S., should be used by itself, nor should two of them be used in combination for a patient whose organisms are already resistant to one of the pair. . . . The Committee has obtained convincing evidence that streptomycin 1 g. daily + isoniazid 100 mg. twice a day is a highly effective combination of drugs when used for a period of three months in the treatment of pulmonary tuberculosis. On none of the clinical or bacteriological criteria was the combination inferior to streptomycin 1 g. daily + P.A.S. 5 g. four times a day over this period; in two respects—namely, in lowering the sedimentation rate and in fostering weight gain—it was decidedly superior. Nevertheless, the slender evidence on bacterial resistance which is available after four months' treatment is not entirely reassuring. In view of the short period of observation it is certainly not yet possible to assess the final place of streptomycin + isoniazid in the chemotherapy of pulmonary tuberculosis."

Death of Dr. Daniels.—Dr. Marc Daniels, the author of "Isoniazid in Treatment of Pulmonary Tuberculosis" in the *British Medical Journal* (**1**:521, 1953), died at the age of 46. He received his early education in Manchester but took his medical training in Paris. In 1942 he was appointed scholar to the Prophit Tuberculosis Survey of the Royal College of Physicians, and so began an association with tuberculosis that was to bring him an international reputation in experimental medicine. In conjunction with Bradford Hill, he was largely responsible for the organization of the Medical Research Council's clinical trials on the chemotherapy of tuberculosis, which are now internationally recognized as models of how controlled clinical therapeutic trials should be carried out. The partnership between these two, in many ways utterly contrasting workers, was an ideal one. Bradford Hill provided the statistical skill and knowledge that planned the trials, but it was Marc Daniels' clinical knowledge and understanding of clinicians that allowed the trials not only to be carried into practice but to be carried to fruition. Clinicians, generally, are not fond of controlled trials, but Daniels' tact and skill soon convinced them of the wisdom of such careful planning. Indeed, one of the greatest tributes to his work is the fact that British clinicians now automatically accept the Hill-Daniels scheme as the basis for any trial that they may be proposing to carry out. His passing at such an early age is a serious loss to British medicine. His work as a tuberculosis consultant in Europe for UNRRA after the war and his membership on the Streptomycin Subcommittee of the WHO Expert Committee for Tuberculosis had brought him into contact with workers in tuberculosis throughout the world.

New Hypotensive Drug.—Impressive claims for a new hypotensive drug in the treatment of hypertension are made in a series of three papers in the *Lancet* (**1**:454, 455, 457, 1953). The chemical formula of the drug is pentamethylene 1:5-bis (1′-methylpyrrolidinium) di-iodide. In a preliminary note on the pharmacology of the preparation, Wien and Mason (page 454) report that it has ganglion-blocking activity about five times greater than hexamethonium bromide and its duration is one and one-half times longer. It is devoid of anticholinesterase, neuromuscular paralyzing, and histamine liberating properties in doses fully effective in blocking ganglia. Gastric secretion in the chloralosed dog, induced by vagal stimulation, was inhibited with small intravenous doses, the flow of juice and acidity being decreased to a greater extent than peptic activity. The effect on blood pressure is similar to that obtained with hexamethonium, but the onset is slightly slower and the recovery slightly more prolonged. No direct effect on the isolated perfused heart of the cat or the coronary outflow in the dog was detected.

As a result of their findings with the bitartrate in 75 patients with duodenal ulceration and hyperchlorhydria without cardiovascular abnormality, Maxwell and Campbell (page 455) report that it has "a high degree of activity in man in reducing the blood-pressure." The action is more prolonged than that of hexamethonium, and "more consistent results follow oral dosage." Smirk (page 457), also using the bitartrate instead of the di-iodide, investigated the effect in hypertensive patients and confirmed that "initial subcutaneous doses . . . are about five times as active as initial doses of hexamethonium bromide, and the fall in blood-pressure lasts longer . . . It seems that a good control over the blood-pressure without toxic manifestations can be obtained with a majority of hypertensive patients." It is considered to be superior to hexamethonium bromide for oral administration. In four months' continued administration toleration and cross-toleration did not develop to the same extent as with hexamethonium bromide. Like the latter, however, it does give rise to postural hypotension in the erect posture and leads to an additional fall in blood pressure after meals. Smirk concludes that "Preliminary studies justify extensive therapeutic trials" with oral administration of this preparation.

NORWAY

Heart Disease Discovered by Mass Radiography.—A by-product of mass radiography in the search for tuberculosis is a number of cases of heart disease hitherto unknown. Dr. Jon R. Myhre recently reviewed the mass radiographic findings in Bergen, the second largest town in Norway, in 1950 and 1951, when a total of 69,872 persons over the age of 15 years were subjected to this test. The attendances for this test represented 79% of all the persons eligible for it. Abnormalities of the cardiovascular system, although for the most part insignificant, were found in 3,994 cases, among which were 225 in which a closer examination was necessary. As many as 200 of these 225 persons underwent further examination, including examinations of the blood pressure, the urine, height and weight, and hemoglobin concentration. Electrocardiographic examinations were also undertaken, as were, when specially indicated, examinations for basal metabolism and syphilis. Among the 200, 35 were found to be healthy and 36 had been unaware of the heart disease discovered on this occasion. These 36 patients included 14 suffering from hypertensive heart disease, 12 from rheumatic heart disease, and 5 from syphilitic aortitis. In discussing these cases, Dr. Myhre quotes American observers who have expressed doubts as to the utility of mass radiography as an economically defensible means for discovering heart disease. They have pointed out that the number of cases of heart disease diagnosed for the first time by this procedure is insignificant in comparison with the work expended on it. They have also insisted that many cases of heart disease are not radiologically demonstrable. Dr. Myhre does not dismiss these objections forthwith, and he suggests that the cardiological follow-up of patients who show some cardiac anomaly on mass radiography could be considerably simplified by requesting only those persons who have been unaware of any heart disease to present themselves for a special examination. In this way about two-thirds of the persons with cardiac anomalies on mass radiography could be ignored.

Inter-Scandinavian Public Health Problems.—Every year the chiefs of the public health services of Denmark, Finland, Norway, and Sweden meet to discuss problems requiring cooperation between these countries, whose total population is some 18 million. At the last meeting of this kind, held in Oslo in April, Dr. Karl Evang, chief of the Norwegian Public Health Service, acted as host. Reporting on this meeting in a radio address, he explained how he and the chief of the health service in Sweden have arranged for the interchange of medical services on the long frontier between Norway and Sweden, where henceforth the Norwegian who falls ill in Sweden and the Swede who falls ill in Norway will receive medical attention without official delay. In the matter of food control, Norway is to benefit from the example recently set in Sweden, where a new law has been promulgated concerning the addition of coloring matter or preservatives to food. In the past, such additions have been permitted more or less without control, the public health authorities intervening only when the additions became suspect as injurious. Henceforth in Sweden no artificial substances can be added to food until definite official permission has been given in each case. The other Scandinavian countries are closely following the experiences of Sweden in this field, and, as Dr. Evang intimated, something of the sort may also come into force with regard to drugs.

At the same meeting inter-Scandinavian problems arising from outbreaks of severe epidemics were discussed. It was arranged that in the event of severe outbreaks of poliomyelitis, for example, the one country should come to the aid of the other with material and personnel. Cooperation and exchanges of experiences are to be established with reference to the long-term treatment of poliomyelitis patients as well as the best treatment in the acute stage of the disease. Cooperation in the field of research is also to be promoted.

Methantheline Bromide Treatment of Gastric Ulcer.—At the Medical Department of the public Drammen Hospital, controlled tests have lately been carried out with a supply of methantheline bromide (Banthine) sent from the United States for physiological and clinical trial. Control of these tests was effected by giving some of the gastric and duodenal ulcer patients an inert placebo whose color and taste made it resemble the drug under study. The physiological tests showed that methantheline bromide is effective in reducing gastric secretion, particularly in cases of duodenal ulcer. The clinical tests included the administration of a 50 mg. tablet of methantheline bromide four times daily, usually for five to six weeks, after which the dosage was gradually reduced. Among the 94 patients thus treated were 6 for whom the drug had to be discontinued because of troublesome side-effects. There remained 88 patients, among whom there were 73 responding favorably to this treatment and 15 who remained stationary or became worse. After an observation period of 12 to 13 months, as many as 45 showed recurrence of symptoms. Among the 44 patients receiving only the placebo there were 18 who became symptom free and 9 who improved. Commenting on these findings, two members of the staff of the Drammen Hospital, Dr. J. M. Marcussen and Dr. J. H. Solem point out that methantheline bromide seems to be useful in cases of hypersecretion and pain. This drug may be serviceable in combination with the conventional treatment of gastric ulcer but is not to be relied on alone.

This controlled test of methantheline bromide, reported on with charts and diagrams in *Nordisk medicin* for April 3, 1953, is supplemented in the same number of this journal by a general review of the conservative treatment of gastric and duodenal ulcer. The author of this review, Dr. Olaf Römcke, is in charge of the medical department of the Drammen Hospital and is joint author of several earlier publications on the subject. As he points out, much less is known of the long-term than of the immediate effects of conservative treatment, and it is only during the last 10 to 15 years that reliable investigations have been undertaken of the late results. They suggest that conservative treatment confers lasting freedom from symptoms in only 20% of gastric ulcers and only 12% of duodenal ulcers, while the ultimate mortality is about 3%. Dr. Römcke also finds that the duration of symptoms plays a very important part with regard to ultimate results, whereas the age and sex of the patient have little effect on the rate of healing.

Norwegian Radium Hospital.—The annual report for 1951 of the Norwegian Radium Hospital, which serves the whole of Norway and is under the management of Dr. Reidar Eker, brings out several points of general as well as special interest. It shows, among other things, to what extent Norway has become a welfare state, for only 148 patients paid for their own care in this year. There were 2,048 patients paid for under the National Health Insurance plan, and several other patients were provided for out of special funds and legacies. Of the total 3,590 patients treated during 1951, 558 were outpatients. The greatest number of patients treated in one day was 137, and the smallest number was 83. A classification, according to the age, of the patients admitted to the hospital in 1951 showed that under the age of 5 years there were as many as 358 patients, whereas in the next five year period there were only 19. The number of newcomers between the ages of 50 and 60 was 458, and those between 60 and 70 numbered 433. The total number of patients over 70 was 440. The long list of methods of inducing anesthesia shows how varied they have become; hexobarbital (Evipal) narcosis was induced in only 2 cases in one department and in only 18 cases in the gynecologic department. The report concludes with a list of the articles published by the staff of the hospital in 1951. This list includes two papers by Dr. Axel Scheel, one on "Five Years' Results of Radiosurgical Treatment of Cancer of the Breast" and the other on "Some Prognostic Factors in Carcinoma of the Breast with Special Reference to Biopsy." Another member of the staff, Prof. Ernst Schjött-Rivers, published in the same year "Can the Results of Irradiation in Cancer of the Uterine Cervix Be Improved by Prophylactic Hysterectomy?"

TURKEY

Tuberculosis Campaign and BCG Vaccination.—More than 25 years of malaria control work and, in recent years, the plentiful application of DDT procured through the Marshall Plan, have considerably lessened the incidence of malaria in Turkey. The scourge has almost come under control, and deaths from malaria are few now. At present, tuberculosis is first in importance among public health problems in Turkey. Unfavorable housing conditions and the high cost of food during and after the war raised the tuberculosis death rate from 218 to 267 per 100,000. Formerly, an average of 40,000 persons died of tuberculosis every year. The various measures taken by the Ministry of Health and Social Assistance reduced the tuberculosis death rate to from 150 to 200 per 100,000. To the 5,932 hospital beds available for tuberculosis patients in 1950, 1,068 have been added, so that there are now 7,000. Tuberculosis outpatient clinics and health centers have been augmented, patients with open cases have been isolated, and there are now a thousand beds, with all treatment free, available in government sanatoriums and preventoriums. Several 1,000-bed tuberculosis hospitals are under construction; two on the Black Sea coast, one in Samsun, one in Trabezond, one in Adana, and one in Gaziantep. It is hoped that by next year these hospitals will be ready to receive patients and, thereby, reduce the long waiting lists. Two 400-bed hospitals for tuberculosis of the bones have especially long waiting lists. The incidence of tuberculosis of the bones is high in Turkey, but there is less tuberculosis of the joints and lymph node tuberculosis. According to Prof. Tevfik Saglam, president of the Istanbul tuberculosis campaign society, the death rate from tuberculosis in Istanbul has dropped from 270 to 125 per 100,000 during the last 10 years.

A year ago the preparation of BCG vaccine was begun at the Ankara Refik Saydam Institute of Hygiene. The vaccine has been investigated by World Health Organization experts and has been found to be of superior quality. To date it has been used for the immunization of 400,000 persons in various parts of the country.

In urban communities, of the total number of persons tested or immunized, 50 to 70% either reacted positively to a Mantoux test or gave a marked Pirquet reaction; in rural communities, 20 to 30% of all persons similarly treated gave positive reactions. The great isolation of the Anatolian villages, the fact that weather permits the people to work outdoors, and the fact that in many villages there are no open cases of tuberculosis, seem to account for the low incidence of tuberculosis in such rural areas. But, when the men take on work as laborers, mostly in the building trade in the towns and cities, they soon become infected. A great many localities have much dust and strong winds that spread the germs, so that soon negative Pirquet reactions become positive. In a radio address at the beginning of the new year, Prof. Ekrem Hayri Üstündag, the minister of health and social assistance, invited the inhabitants of Thrace, which has a population of 1,650,000, to participate in the tuberculosis campaign. A team of 24 jeeps, a mobile laboratory and other equipment obtained through the Marshall Plan, 8 specialist physicians, and 36 technicians will visit all urban and rural communities in Thrace and immunize all persons not already vaccinated. Persons with open cases will be isolated and treatment insured. In autumn, the team is to begin immunization in Anatolia; it is hoped that this program will further reduce tuberculosis.

Hypovitaminosis and Vitamin C Deficiency.—In *Klinik*, the periodical of the Bursa medical society, internist Dr. Tevfik User has published his observations based on an investigation of vitamin C deficiency in the eastern province of Erzurum. Erzurum is almost 2,000 meters above sea level, lies under heavy snow for six months of the year, and, for four to five months every year, has a temperature of 25 to 30 C below zero. In this region, it is customary for the inhabitants to bury certain vegetables and roots and, also, to dry or pickle fruit. Vegetables grown there are turnips, carrots, spinach, beets, onions, cabbage, leeks, and asphodel, a white, flowering plant of the lily family. In his report, Dr. User listed the complaints of 126 patients, the vegetables and fruit included in their diet, the parasites found in their intestinal tracts, and the vitamin C content of their urine. One-third of the patients were women and two-thirds were men. Five patients (4%) were not natives of Erzurum. In 12 patients (9%), the diet was composed chiefly of carbohydrates, as they could not afford anything else. The diet of the remaining 109 patients (87%) included dried vegetables, dried fruit, and pickles. Forty (32%) of the 126 patients had supplemented their diet with lemons and oranges, and 5 (4%) of the patients had taken a vitamin C preparation on the advice of their physicians. Urinalyses revealed a vitamin C content of less than 4 mg. in a 24 hour collection. In the patients who had supplemented their diet with lemons and oranges, the vitamin C content of the urine was 57%. Fifty-two patients (41%) complained of weakness, vertigo, and pain in the extremities and in the back; 90% of these patients belonged to the hypovitaminosis group. Examination of the feces of the 126 patients revealed the presence of ascarides in 40% and Tenia saginata in 4%. Of the patients who had ascarides, 82% were in the hypovitaminosis group. The investigation showed that, even if the customary diet is supplemented with citrus fruit, the inhabitants of this region suffer from vitamin C deficiency. Dr. User investigated the vegetables, fruit, and pickles concerned and found the ascorbic acid content of a 100 gm. portion insufficient.

Aortic Aneurysm Caused by Syphilis.—In *Klinik* (vol. 10, no. 2, 1952), periodical of the Bursa medical society, Dr. Ziya Tanan, chief of the Ahmed Vefik Pasha General Hospital medical department, and his assistant Dr. Haydar Tugral have published the case history of a patient who had a large aneurysm of the aorta of syphilitic origin. The patient, a 53-year-old farmer, had never been ill and had never felt any pain or other symptoms. A week prior to his admission to the hospital, while working in the field, he had a sudden severe pain in the chest that was followed by the appearance of a swelling the size of a walnut in the middle of the chest. He had slumped to the ground and was unable to rise. Hot dressings increased the swelling and the pain. The patient was then taken to the hospital. On admission, he was weak and anemic. On the upper part of the sternum he had a tumor the size of an orange. The surface of the tumor was bluish-red and gave the appearance of an abscess; the other organs appeared normal. There were deep normal heart sounds; blood pressure was 150/80 mm. Hg; and auscultation by phonendoscope over the tumor indicated a whistle-like systolic-diastolic souffle. Thrill was not perceptible, but there was a regular pulse beat. Blood examination revealed a white blood cell count of 4,500 per cubic millimeter, a red blood cell count of 3 million per cubic millimeter, and 10% eosinophils; there were no plasmocytes. The sedimentation rate during the first hour was 35 mm. Casoni's reaction was negative. There was a strong positive reaction to a Wassermann test.

A radiogram showed a greatly distended aorta that created the illusion of there being two hearts, one on the other. The pulse was visible and made a shadow. A radiogram of the heart showed that it was large but otherwise normal. A slanting radiogram revealed a distended aorta projecting toward the front of the chest. Because of a mechanical accident, an electrocardiogram was not made.

Within a week the tumor doubled in size and became extremely painful. The patient was given morphine and atropine for relief. He died on the 16th hospital day. Necropsy revealed a normal, large heart. The pericardium contained very little fluid. A little beyond the point at which the ascending aorta leaves the pericardium, there was a smooth-edged orifice 2 cm. in diameter; on probing through the orifice, it was found that there was an aneurysm the size of an orange that extended 4 cm. to the sternum and joined the aorta. The inside of the aneurysm was organized and contained white thrombi; in the center there was a canal. On the outside of the sternum, the aneurysm contained coagulated blood. The orifice and the valves did not reveal pathological change. There were no clinical, macroscopic, or coronary lesions. Although the anterior mediastinum showed extensive syphilitic lesions, tumoral symptoms were absent at the posterior mediastinum. That the patient was able to work with an aneurysm advanced to the point that it pierced the chest and that he had felt neither arterial nor precordial pain until he collapsed is amazing.

CORRESPONDENCE

HEPARIN AND SYMPATHETIC NERVE BLOCK IN FROSTBITE

To the Editor:—In THE JOURNAL (**149:**1199 [July 26] 1952), Edwards and Leeper published a paper "Frostbite: An Analysis of Seventy-One Cases." The summary of that article contains the statement, "The use of sympathicolytic drugs in the acute stage seemed to have no effect on the outcome. Anticoagulants would appear to deserve a more thorough trial, and more data may help in the question of rapid versus slow thawing." I have successfully treated two severe cases of frostbite by the methods described by these authors.

On Jan. 4, 1950, when the temperature was 28 C, a guard, aged 46, from Kokkola came to me for treatment. His left foot had been frozen that evening; he came to the outpatient department two and one-half hours after the foot was frozen. Before he came to the hospital, his foot had been thawed and massaged at the Kokkola railway station. On admission, his foot was thawed, snow-white, cold and insensible, and the dorsalis pedis artery revealed no pulsation. I performed a sympathetic nerve block, and the patient was given 2 ml. of heparin chloride intravenously. In a few minutes, the foot became dark red. The patient remained in the hospital for three days, during which he received 12 ml. of heparin. His foot did not show any blisters, and it has remained in an excellent condition for over three years.

The second patient was a 43-year-old stoker. On Feb. 18, 1951, he was returning from a wedding in an intoxicated condition when he fell asleep on the ice about 100 meters from his home. The temperature was 23 C. When he awoke, his head was clear, but he was unable to walk because his feet were frozen. He crawled home and was then sent to the hospital. On admission, it was found that his left leg and the fingers of his right hand were frostbitten. He was given treatment similar to that of the other patient. He was hospitalized for one month. There was swelling of his feet and part of the legs and also of the fingers of the right hand. Blisters were seen on the left foot and the fingers of the right hand, and the nails came off. There was no gangrene. The patient still carries on in his job at a sawmill. The left foot has been sensitive to cold; however, the man has been able to work without interruption.

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Kokkola, Finland.

AORTIC STENOSIS AND BERNHEIM'S SYNDROME

To the Editor:—In a letter to the editor (*J. A. M. A.* **151:**1369 [April 11] 1953), Soloff and associates reject our contention that an isolated, prolonged ether time in a patient with aortic stenosis may be caused by partial occlusion of the right ventricle due to deviation of the interventricular septum (Bernheim's syndrome). Their own view, which prompted our criticism (*J. A. M. A.* **151:**578 [Feb. 14] 1953), attributes the disproportionate increase in ether time observed in cases of aortic stenosis to secondary changes in the lungs and resultant chronic cor pulmonale (*J. A. M. A.* **150:**1111 [Nov. 15] 1952). These authors insist that dyspnea was present early in all of their patients and that this fact, by definition, excludes Bernheim's syndrome. Their original report, nevertheless, states that 9 of the 14 patients studied had "no clinical evidence of heart failure." They also contend that they reported prolonged "pulmonary circulation time," normal "left heart time," and normal venous pressure, the latter rising only as a subsequent event. Unexplained, however, is the high venous pressure (recorded in their tabulation of results) that was a coincidental finding in 4 of 8 patients without clinical heart failure but with prolonged pulmonary circulation time. Even if ether is a thoroughly unreliable agent for testing arm to lung circulation time, because of the pooling effect of blood in the lungs as pointed out by these authors, the elevated venous pressure observed in some of their clinically compensated patients cannot be minimized and requires explanation. It is our contention that the syndrome of Bernheim, which is a direct result of the valvular defect itself, offers a far more logical explanation for these findings than does chronic cor pulmonale, which, according to Soloff and associates, must be assumed to arise as a secondary phenomenon caused by increased pulmonary blood volume and recurrent pulmonary infections.

On using paraldehyde and dehydrocholic acid (Decholin) we have observed a disproportionate increase in arm to lung circulation time in patients in whom the clinical diagnosis of Bernheim's syndrome was confirmed at necropsy. At the present time, some cases of right ventricular stenosis resulting from septal bulging are seen that do not meet the strict requirements of the clinicopathological syndrome first described by Bernheim and later confirmed by numerous French, Spanish, and Latin American authors. Some of these atypical cases may be explained by the fact that the duration of the cardiac patient's life is considerably longer today than it was in the time of Bernheim. Present methods of treatment permit recovery from recurrent bouts of left ventricular failure that intermittently increase pulmonary vascular pressure and cause right ventricular hypertrophy.

Dr. Paul D. White, who previously took issue with the Bernheim concept (*Am. J. M. Sc.* **216:**485, 1948), was kind enough to review one of our protocols in a recent case of aortic

stenosis and to examine the heart after necropsy. Dr. White agreed that the interventricular septum appeared to encroach markedly on the cavity of the right ventricle so that the size of the chamber was appreciably reduced. In a subsequent letter, Dr. White stated: "I think the case is worthy of report from the standpoint of excessive heart weight as well as because of the possibility that the heart may represent in part the Bernheim's syndrome. However, there are two points against uncomplicated Bernheim's syndrome and these two points are important, namely (1) initial dyspnea and (2) engorgement of the pulmonary arc and lung hiluses by X-ray just prior or coincidental with the right heart failure pointing to an initial left heart failure." The heart in this case is shown in the photograph.

Although the evolution of clinical signs and symptoms may not always arise in the manner originally described, it seems important to recognize that right ventricular stenosis can and does originate from the acquired anatomic changes reported by Bernheim. In our opinion, deviation of the hypertrophied interventricular septum has been an unrecognized cause of intractable heart failure in many patients.

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COUNCIL ON MEDICAL SERVICE

CONFERENCE ON PHYSICIANS PLACEMENT SERVICE ACTIVITIES

The following are the summary and conclusions of the Council's first regional conference on physicians placement service activities prepared by Raymond McIntyre, field secretary of the Missouri Medical Association, who acted as conference summarizer.

The first regional conference on physicians placement service activities sponsored by the Council on Medical Service was held in Memphis, Tenn. Representatives from Alabama, Kentucky, Louisiana, Michigan, Mississippi, Missouri, Oklahoma, Tennessee, Texas, and Virginia were present. Others in attendance represented the American Academy of General Practice and the Council on Medical Service and Council on Rural Health of the American Medical Association.

The purpose of the conference, as stated by Ralph A. Johnson, M.D., chairman, in his introductory remarks, was based on one important proposition. How can the American Medical Association, through its Council on Medical Service, be of maximum assistance to the state medical associations in efforts to place physicians where they are needed in the respective states? He reviewed the beginning of this proposition and its inception from the House of Delegates, which directed the Council to assist the various state medical associations, wherever possible, in developing effective physician placement services and in improving those already in existence. He pointed out the following basic reasons why the American Medical Association, as well as state medical associations, should be interested in this important project.

"The medical profession has been hearing repeatedly in the last few years that a tremendous shortage of physicians exists in the United States. Somebody had to do something about the problem. Should it be the federal government, or would the matter be handled by logical voluntary means? The American Medical Association and its constituent medical associations took up the challenge and decided the task could be and would be done by voluntary methods. This conference is a small part of the decision to get this job done—that is, the big job of the proper distribution of physicians by our own voluntary efforts." In concluding his remarks, Dr. Johnson asked that suggestions and ideas for reasonable programs be presented by all attending the conference.

BASIC PLACEMENT SERVICE ACTIVITIES

Mr. Edgar J. Fisher Jr., director of the Virginia Council on Health and Medical Care, reported on the experiences of the placement service in Virginia, which is one of the most effective state placement services. He discussed the activities that a state medical association should undertake in order to have a reasonably adequate program to serve both the communities and the physicians. His two basic placement service activities are (1) to make it as easy as possible for a physician to find a good location and (2) to make it as easy as possible for a community to find a physician.

In addition to this, Mr. Fisher enumerated a number of auxiliary advantages of a placement service, some of which were public health benefits; benefits to local industry; benefits to voluntary health organizations; benefits to rural communities by showing them how to get physicians; benefits to rural populations by giving them a feeling of security; benefits to the medical profession because of public relations advantages; and benefits to the physician seeking a location by showing him where his services are needed and by paving the way so that the community will be ready for him when he arrives.

From Mr. Fisher's discussion, it would seem that all states could use some of these selling points to promote better and more effective placement services. Surely these selling points might well be placed in the hands of those states where the placement services are not adequate.

The maintenance of lists of openings for physicians with adequate data on these openings, as well as lists of physicians with pertinent information on each, was well brought out by Mrs. Wacille Johnson, head of the Physicians Placement Service of the Texas Medical Association. The Council on Medical Service presented sample questionnaires that could be used effectively to secure basic information on openings as well as on prospective physicians with the idea that changes should be made to meet conditions of the individual states. These forms appear quite adequate. It was brought out that some states have the added advantage of personal contact work with communities and prospective physicians through offices of field secretaries. The conferees agreed that information from such personal contacts was invaluable in operating a placement program.

In the placement of prospective physicians, the factor of military service comes into the picture. A number of communities apparently are attempting to keep their young physicians, who are obligated to military service, out of service instead of making efforts to get replacements. It was pointed out that a close liaison between state placement services and military advisory committees might remedy this situation to some extent.

Some states apparently maintain comprehensive lists of physicians seeking locations and of interns and residents and lists of communities seeking physicians while others are doing very little in this direction. In respect to these lists a few state placement bureaus have gone so far as to work with local communities in supplying, through local initiative, facilities for attracting physicians to those communities. This has usually been through the building of clinics, hospitals, or possibly the securing of living quarters—all on a strict business basis. In this respect it was well brought out that there is no substitute for initiative on the part of a community if it wishes to secure adequate medical services.

The matter of various state placement bureaus supplying the Council on Medical Service with lists of openings was discussed fully from the standpoint of such lists being revised each month, per quarter, or less often. The reason such a procedure arises is because many young physicians seeking locations are constantly writing to the A. M. A. or calling at the headquarters office for locations in certain areas of the country—usually covering three or four or more states. The states represented all expressed a willingness to supply listings at the request of the Council.

The manner in which state placement services might cooperate with medical schools and hospitals in an effort to interest physicians in communities needing general practitioners was well covered. Some states contact medical students and interns or residents directly by individual letters informing them of the services available free of charge through the state medical association placement bureaus. Others have informal meetings for the benefit of these young physicians to inform them of specific attractive spots. One state medical association uses its journal to list locations as well as to give short résumés concerning physicians seeking locations.

ATTRACTING YOUNG PHYSICIANS

A number of physician placement services are taking the lead in educating communities in the necessity of making facilities and financial aid available to young physicians in beginning a practice as well as making efforts to point out to some of the smaller communities the difficulties that they may encounter in securing physicians under modern conditions. In line with these efforts, Dr. Johnson reported that the Council on Medical Service, in cooperation with the Council on Rural Health and the Department of Public Relations, expects to publish in the near future a booklet designed to assist communities in attracting a physician and endeavoring to educate them to their responsibilities. The question came up as to whether physician placement should be solely a state function and, if so, what should be the role of the American Medical Association. The manner in which the American Medical Association might be of assistance to state association placement services was considered thoroughly. Some of the suggestions were that the American Medical Association should (1) continue to send to state associations lists of

physicians still in service but soon to be released; (2) send placement information of successful state programs to other states that might be interested in developing more adequate services; (3) sponsor more regional meetings of this particular type; (4) consider sending representatives from the Council to state association headquarters that seemingly do not feel the need for active placement services; and (5) maintain liaison with other national organizations in the promotion of better placement services. It was apparent that the A. M. A. has a definite role in the over-all placement program.

In discussion of placing of physicians in small communities, it was pointed out that one cannot overlook the basic elements of the training of those physicians who are to go into such practices. Albert S. Dix, M.D., of the American Academy of General Practice and A. E. Spellman, M.D., of the Rural Health Committee of the Missouri State Medical Association, brought out points pertinent to this subject. They stressed the fact that it was necessary to raise the status of the general practitioner in the eyes of society as such, as well as in the medical profession. In addition they believe it is necessary to get medical schools to offer the proper training for a general practitioner who needs to be able to handle medical and surgical emergencies, which occur in small communities as well as in metropolitan areas. They pointed out that a one year rotating internship was not enough to cover that requirement. The general practitioner, they stated, should have hospital staff privileges as well as continuous postgraduate training facilities to carry out his position as the watchdog of community health. Preceptorships seem to be one of the valuable means of attracting and obtaining physicians for general practice.

SUGGESTED CRITERIA FOR RATING COMMUNITIES

Priority rating plans that might be used to estimate a community's need for a physician and to evaluate the ability of a community to attract and support one were proposed to the conference by Eugene Dye, a student at Northwestern University Medical School, for discussion, criticism, and suggestions.

These community rating plans or scales, as they might be termed, were developed from basic information secured by Mr. Dye in his visits last summer to various state medical association headquarters where he observed what the various states were doing in the placing of physicians. Just how they went about the task and why they were successful or unsuccessful was studied. Basic information on communities necessary to utilize the priority rating scales could be obtained for the most part from the type of questionnaires already in use by many states. It was brought out in the discussion that the rating gained by a particular community seeking a physician might be used in discussing the situation with citizens of the community to help convince them that possibly they could not support a physician or that it would be better for them to get their medical services from a neighboring community. Using the rating program in this manner is, of course, in addition to the main proposal, namely, to indicate to a community its weaknesses in attracting a physician and to indicate to physicians those communities offering the attractions they seek. The discussion relative to the proposed priority rating scales pointed out that it might be necessary in some states to vary the scales to some extent to conform to local situations, but the basic structure of the rating programs seemed usable to all placement services represented.

MISSISSIPPI SOLUTION TO THE PROBLEM

The explanation of how Mississippi is solving its physician placement problem was presented by Lamar Arrington, M.D., president of the Mississippi State Medical Association. Through a medical education revolving fund appropriated by the legislature and administered by a state medical education board, money has been loaned to medical students who are residents of Mississippi to aid them in completing a medical education. An agreement to return and practice in rural Mississippi is required. A total of some 366 Mississippians are now in or have gone through this scholarship program. Of these, 107 are now in practice in Mississippi. This program has apparently placed Mississippi in the position of not being too concerned about placing physicians at present but more concerned with replacing those who leave practice for various reasons, particularly military service.

CONCLUSIONS

1. Communities should be made aware of their responsibilities in affording attractive features that may appeal to a young physician and his family. Some of these features will include (*a*) physical facilities that make it possible for him to deliver modern medical care, including laboratory and clinic requirements and (*b*) living facilities. Seemingly it was agreed that some communities may well make a business proposition with a young physician to provide adequate living facilities as well as medical practice facilities so that the physician will not feel his services are being subsidized if he receives assistance in beginning practice.

2. In getting communities and physicians together under a proposition as indicated above, placement services may use various procedures, such as personal letters to communities and prospective physicians, telephone calls, and personal interviews. It was agreed, however, that in most cases attracting a physician was a cooperative endeavor and a selling proposition on the part of the community.

3. Medical schools have a definite obligation to improve the training of family physicians, and one of the functions of the American Academy of General Practice and the Council on Medical Education and Hospitals of the American Medical Association today is to secure that advancement. Similarly, many state medical associations and local chapters of the American academy should offer more postgraduate courses to physicians in outlying areas.

4. Seemingly, there was full agreement that placement bureaus might well approach junior and senior medical students, interns, and residents to apprise them of the services of the various state placement activities.

5. Comprehensive lists of physicians in a state, giving their ages and locations and active or retired status, might well be maintained by all states.

6. Most of those present agreed that the problem of medical placement today is in the distribution of physicians and not in a shortage of physicians.

7. The conferees agreed that the A. M. A. Council on Medical Service was in an ideal position to disseminate state placement information from those states that are having some degree of success to those states that as yet are still seeking help.

8. It was agreed that those states that have a physicians placement service should make every effort to let the members of their association know about the service and to urge them to pass these facts on to those physicians who may be seeking information on locations.

9. It was pointed out that state medical association placement services are in a position to be helpful to physicians coming out of service in aiding them in every way possible to find a suitable location in civilian practice.

10. Many auxiliary advantages accrue to communities as well as physicians in the operation of an effective placement service. It is difficult to argue against the public health benefits, mental health improvement, public relations advantages, and the value of showing persons in small communities and their rural neighbors how to help themselves to get a physician and other medical facilities.

11. It might be well to reemphasize that the conference was in accord that the fundamental placement services should be carried on by the state medical associations with the help and active support of the American Medical Association, particularly as a coordinating agency.

12. Future regional meetings of this type were definitely recommended as the best method in order to provide firsthand information on effective placement services to states in other areas. It was believed advisable, in some instances, to have a field representative from the American Medical Association visit particular states as well as send packet information on placement services.

13. It seemed that most of those at the conference believed that priority rating scales for communities seeking a physician might be a useful adjunct in physicians placement operations. A number of representatives indicated that they planned to make use of the rating plans suggested by Mr. Dye.

MEDICAL MOTION PICTURES

The Committee on Medical Motion Pictures has authorized publication of the following article.

RALPH P. CREER, *Secretary.*

THE KANSAS TELEVISION EXPERIMENT

Paul W. Schafer, M.D., Kansas City, Kan.

It is my intention to describe as objectively as possible our experiment with television in the educational program of the University of Kansas School of Medicine. Certain historical, technical, and budgetary aspects of the project have been presented in a previous report.[1] Now I wish to indicate precisely how we have tried to use this revolutionary new technique and what I believe some of its characteristics to be. Though our original monochrome installation was made in 1949 and was replaced by a color system as early as November, 1951, it seemed advisable to delay an analysis such as this until substantial experience had been obtained. Even now it is extremely difficult to separate fact from theory in all but a few limited areas.

So that the reader may appreciate more clearly the basis for my observations, I will first outline briefly the present situation. Administratively, the department of surgery has been charged with responsibility for the program. That this project has been possible without budgetary support from outside the university is in itself indication of the vision and cooperation that has characterized the school's administration: first under Dean, now Chancellor, Franklin D. Murphy, and now under Dean Clarke W. Wescoe. Another vital consideration is the continuing interest and willing participation of men from all departments of the school. Last, but by no means least in importance, has been the dedicated performance of our technical staff, which comprises a program director, an engineer, and two technicians.

THE EXPERIMENT

First, it should be clearly stated that even our earliest attitude did not envisage that television should be regarded as a substitute for student participation in actual operations. We did, however, easily fall into what we now regard as an incorrect point of view, namely, that all that is required for a successful program is to mount a television camera above an operating table and let it run continuously throughout the operation, with commentary by the operating surgeon. Our first program schedules reflected this attitude in that we merely televised operations from 8:00 a. m. to 12 noon daily, Monday through Friday. During the first hour of each program, throughout the quarter, we scheduled a series of minor and simple major operations about which we felt that the student should know certain technical details. Biopsy, simple excision, hemorrhoidectomy, herniorrhaphy, and appendectomy are examples of the procedures that were presented. Student attendance was required for this period. The responsible instructor in most instances was the operating surgeon, and on most occasions the service resident was stationed in the television classroom to relay questions from members of the class to the surgeon.

From 9:00 a. m. to 12 noon a wide variety of major operations were televised, with the commentary by the operating surgeon, but only rarely with arrangement for a classroom instructor. Student participation in this aspect of the program was on a purely elective basis. The general content of the audio portion of the program as presented by the operating surgeon throughout the television period was essentially the same as would comprise the conversational instruction that the surgeon would normally use at the operating table. Usually more questions were directed toward him from the assembled class than would ordinarily arise from members of the operating team alone. Considerations other than operating technique constituted the bulk of the presentation. Such matters as differential diagnosis, etiology of symptoms, normal and abnormal physiological processes, gross pathological conditions, regional anatomy, prognosis, preoperative and postoperative care, and operative and postoperative complications were routinely presented. I think it an accurate observation that most of our surgeons felt constrained to carry on a more detailed discussion along the lines mentioned when they knew that the procedure was being televised, though personal tension phenomena were not nearly so great as had been anticipated and occasionally the surgeon would seem to be nearly oblivious to the fact that television was going on or that his operation was being observed.

In the early months of the program (late 1949 and early 1950) elective student participation was at a high level and it was very difficult to assess just how much this was due to interest in the subject matter itself and how much should be referred to the undeniable novelty of watching operations on a television screen. Incidentally, this period coincided with the beginning of commercial broadcast television in our geographic area, and this too undoubtedly had its favorable attention-gathering influence on our effort. Soon, however, it became apparent to all observers that our program format was inadequate in respect to long-sustained interest. Just as the student finds it boring and wasteful to stand at the operating table for hours, holding retractors, when many other more challenging opportunities present themselves, so did our students gradually spend less and less time in the elective television clinics, though they were quick to admit that they could see much more of the operation in the television classroom than they could when standing in the fourth position at the operating table. No small consideration also was the fact that our monochrome image of that date was clearly inadequate for the presentation of operative scenes. The net result of all these influences was that by the spring of 1950 we still had excellent attendance at our required 8:00 to 9:00 a. m. class sessions, but elective student participation from 9:00 a. m. to 12 noon had fallen off sharply. Many times the surgeon would be talking to an empty classroom because the students would become bored with the slow action or respond to the many other demands made on their time by a busy surgical clerkship.

Fortunately, at this time it became apparent that we would be able to replace our monochrome equipment with a color system and, further, that new building construction would, for the first time, make possible the development of a control room area overlooking the camera in the operating room. Though at the time it did not appear as such to those of us who were impatient to go forward with the study of the television problem, the interval during late 1950 and early 1951 when we were without television facilities afforded an opportunity for the objective evaluation of just what little had been accomplished and what changes should be made to insure that we could successfully go forward. Unanimous agreement was reached concerning the necessity for an entirely different kind of programming than outlined above. First and foremost was an awareness that unbiased analysis of the student's experience with assisting at operation reveals that in the main this experience represents a large waste of time that might be used in other more worth-while pursuits if a technique could be evolved to expose him to the critical fragments of information that represent his total increment of knowledge obtained by actually standing at the operating table for long hours. Secondly, and almost as important a consideration, was a clear-cut appreciation that the instructor to be effective had to be physically present in the classroom so that he might bring all of his abilities to bear on the presentation of his subject. Thus, we came to the position that television to be employed most effectively had to be used in short sequences and had to present the salient aspects of topographic anatomy, regional anatomy, normal and abnormal physiological processes, gross pathological conditions in situ, and certain details of the operative procedure itself.

These concepts immediately posed major problems in planning for a smoothly flowing performance in which television scenes could properly be regarded as teaching aids rather than as substitutes for teaching. Needless to say it also relegated the operating surgeon to a position subordinate to the classroom

Professor and Chairman of Department of Surgery, University of Kansas School of Medicine.

1. Schafer, P. W.: Television at the University of Kansas Medical Center, J. A. M. A. **152**: 78-82 (May 2) 1953.

instructor. At this stage in our deliberations we became acutely conscious of the sheer manpower problems posed by such a concept. To state this simply, we faced the dilemma of having only 14 full-time members of the surgery faculty, which meant that each man was charged with the responsibility for planning an integrated program each two weeks. Though at first glance this may appear to be an adequate interval it was surprising how often it seemed to be all too short a time. Some of the many details to be considered were the selection of the patient and arrangement for a specific operation to be done at a given time, securing the cooperation of another staff man or resident to do the operation, arrangement for the technical staff to be oriented to show certain scenes as the operating team made them available, and the organization of subject matter for classroom presentation, including the preparation of lantern slides, short motion picture strips, and other audiovisual aids.

One further thought loomed large in our consideration of the main problem of how to do the best possible job. Since we were to have only one camera chain for some as then unforeseeable time into the future, it seemed desirable for many reasons to try to include representatives of other clinical and basic medical science faculties into the program whenever possible. This also coincided with our general curriculum orientation, wherein we are at every turn trying to break down rigid departmental lines in our teaching effort. Thus, each member of the surgery faculty, as he planned his specific program, enlisted the aid of other departmental faculty members to present the subject at hand in group discussion rather than from a biased point of view. Generally our classes have had an average of two or three classroom instructors, of whom at least one has been a basic medical science teacher. Lastly, it appeared incorrect to plan for more than a one hour daily program, since other obligations of the surgery clerkship were such that no more than this amount of time could be spent without sacrificing other worth-while considerations. Also, our prior experience with monochrome television was convincing on the point that several hours of disorganized, uninspiring television could not be expected to capture an elective student audience. Thus the decision was made to concentrate all of our efforts in the direction of producing the best one hour performances that we could. These classes were scheduled from 8:00 to 9:00 a. m., Monday through Friday, and student attendance was obligatory. With the exception of a brief period of interruption in 1952 for conversion of our camera chain for dual purpose use in either color or monochrome we have continuously followed this schedule since our color chain was installed in November, 1951.

At this point I would be grossly remiss if I were not to identify the almost unbelievable cooperation that developed among members of the surgery faculty as well as with representatives of other departments. Certain administrative decisions obviously had to be made and certain pressures exerted, but in the main such successes as we have experienced to date properly should be referred to the cooperative group effort rather than to any single unique feature of the television medium or to any administrative formula. In retrospect, while in this general area of consideration, it does seem likely that surgery more than any other department in the medical school represents a logical starting point for the development of such a program, since implied in all of the above observations is a certain inherent need for discipline, organization, and prompt recognition of direction and authority, all of which are naturally present in a surgical team perhaps to a greater degree than in any other area of the medical faculty.

With resumption of programming in November, 1951, the above ideas were put into force, and needless to say many technical and pedagogic problems were encountered. At times the complications of program planning seemed almost insurmountable. Certain it was that all participants agreed that for a successful long-sustained performance it was imperative that competent persons would have to be obtained to undertake imaginatively major responsibilities in general program coordination and direction. Roughly this academic role is not unlike that of the director in a commercial television show. Acceptance of this concept was unhesitating on the part of our faculty, since they had struggled personally with these many problems, most of which they were poorly trained to resolve. A word of warning is probably in order for those who would embark on such a project without such prior orientation. In this circumstance the program director or coordinator might not be given enough freedom of action and authority, both of which are essential for success.

At the present time 55 carefully selected basic curriculum subjects are presented to the surgical externs each quarter. Each topic is identified in a master schedule, which is distributed among members of the surgical faculty and among the students in advance of the beginning of the quarter. As has been mentioned earlier each faculty member has a class assignment on the average of once every two weeks. Detailed planning begins immediately with publication of this schedule. Each faculty member notes the topics and dates assigned to him for the coming quarter and arranges as far in advance as possible for suitable patients to be available for operation and demonstration on these assigned dates. Though the actual responsibility for each class is clearly identified as being that of the faculty member, he retains the privilege of delegating much or little of the actual planning to the program director with whom he holds

DATE OF PROGRAM Wednesday, 2/4/53 HOUR 8:00 A.M. to 9:00 A.M.

TITLE Emphysema

CLASSROOM INSTRUCTORS Doctors Schafer, Delp, and Brooker CLASSROOM 5th Fl. Cl. Aud. John Jones-2D

OPERATOR Dr. C. Hardin OPERATION Resection of Emphysematous R. U. L.

CONTROL ROOM TECHNICIAN D. Kinkelaar CLASSROOM TECHNICIAN T. Johns

NUMBERS AND LOCATION OF RECEIVERS 3 in the 5th Floor Clinic Auditorium
Mr. Martin Smith-4A to be in classroom at 8:15 A.M.

HOUR	DESCRIPTION	MEDIUM
7:45 A.M.	Begin operation	
8:00 A.M.	Class in session	
8:00 A.M.	Case history on Mr. Jones-Dr. Brooker	Patient's chart
8:08 A.M.	X-rays on Mr. Jones-Dr. Schafer	X-ray view box
8:12 A.M.	EKG on Mr. Jones-Dr. Delp	Opaque projector
8:15 A.M.	Appearance of lung at operation-Dr. Hardin Demonstrate effect of changing endobronchial pressure	Teleview-135 mm & 229 mm lenses
8:20 A.M.	Live EKG on Mr. Jones-Dr. Delp	Oscilloscope
8:25 A.M.	Presentation of Mr. Smith-Dr. Delp	
8:30 A.M.	Incision of bleb-Dr. Hardin	Teleview-229 mm lens
8:35 A.M.	X-ray appearance of emphysema-Dr. Schafer	3 x 4 slides and X-ray view box
8:40 A.M.	Etiology-Dr. Delp	3 x 4 slides
8:45 A.M.	Disturbed physiology-Dr. Schafer	Blackboard
8:55 A.M.	Completed operational field-Dr. Hardin	Teleview-135 mm & 229 mm lenses
	Conclusion:	
	Internist's view-Dr. Delp	
	Surgeon's view-Dr. Schafer	
9:00 A.M.	The end	

Fig. 1.—Typical outline script for an undergraduate television class. Three classroom instructors participated in this program, which included three brief television scenes. Two patients were demonstrated, one in the classroom and one in the operating room.

a preliminary conference usually from one to two weeks in advance of the predetermined date for presentation of a given subject. At this time a rough outline of the subject matter to be presented is made. The audiovisual aids to be employed are determined. Lantern slides, motion picture shorts, and models are used as desired. Occasionally special effects such as direct electrocardiograph and heart sound transmission are used to add further impact to the classroom experience. The exact television sequences are also identified, and these average from three to five in number for each class, each scene lasting for 3 to 10 minutes depending on the character of the subject to be presented. Generally the best effect has been obtained when numerous short scenes have been scattered through the program. This also allows the operating team a better opportunity to prepare adequately each succeeding scene. Initial planning is completed with identification of all participants in the program together with the roles they are to play.

From this preliminary outline our program director familiarizes herself with the subject matter to be presented, advises technical and professional personnel of exact assignments, and makes certain that all equipment to be used will be available in proper locations by program time. All of the above information is finally composed into a script outline such as is illustrated in figure 1. This is distributed to all program participants at a brief conference the day before the scheduled class. At this time each assignment is rechecked, and such cues as are required are agreed on by all concerned. By this time the program director is usually so familiar with the subject that television scene-switching can ordinarily be handled from the context of the classroom presentation without specific cueing.

On the day of the scheduled class all television aspects of the program are the sole responsibility of the director, and here it is that careful preliminary planning will go for naught unless all concerned clearly recognize this single authority. First, the television equipment must be turned on for warm-up at approximately 7:00 a. m., one hour before air time. The classroom and control room technician must check the audio and video transmission circuits and make certain that all receivers are functioning properly. The patient is scheduled into the operating room in routine fashion, except that all regulations must be sharply met in order that anesthesia is established and the first operative field developed comfortably in advance of the appointed time. The director advises operating theater personnel on such matters as lighting, exposure, and field orientation, and then holds the first television scene on the master control monitor until the exact moment that it is to appear on the classroom receivers (fig. 2). The director from her control room position

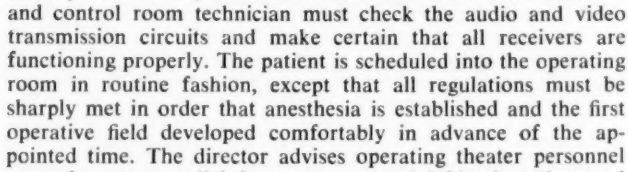

Fig. 2.—Artist's impression of our present television operating room and control area, together with the academic studio planned as our first expansion.

also has constant intercommunication audio contact with the classroom technician and in addition can monitor the classroom presentation since the classroom instructors wear either collar or lapel microphones. Thus, either on prearranged cue or simply from the context of the classroom presentation the first television scene is switched to the classroom receivers. At this time the operating room surgeon is switched onto the program audio line, and over an open two way program audio circuit the classroom instructors and the surgeon together present the first television scene. After this both program audio and video lines are cut by the director, who then cooperates with the operating team in developing the second television scene in order that it will be ready at the proper time, and so the program unfolds, later to be followed by the program conference covering the class for the following day. As will be emphasized later, though this seems like a rigid sort of arrangement, in actual practice we have found the whole experience possible of extreme flexibility.

OBSERVATIONS TO DATE

In describing our experiences and current practices I may have created an impression of certainty that our present ideas are above question. Nothing could be further from the truth. We are actually very much humbled by the challenge of this valuable teaching aid, which can improve our teaching program in so many ways. We are also poorly prepared to solve the problems in adaptation posed by this new medium. Much research must be done before we finally master this near-revolutionary new technique. In attempting to analyze our observations concerning television in the undergraduate medical curriculum it has seemed best to present the following tentative concepts under fairly well-defined and separate headings.

Quality.—Though color television must still be regarded as being in its infancy, with many technological improvements certain to be developed in the near future, the fact exists that our present system is capable of producing an entirely adequate image with remarkable fidelity as to color and detail. The now familiar monochrome picture of the home television receiver suffers as badly in comparison with the color television image as do black and white motion pictures when compared with the color variety. Though our present color television receivers are rather small in size requiring the use of a magnifying lens, larger direct view systems can now be obtained, and in the very near future small size projection systems will become available. In the not too distant future theater-size Eidophor color projectors will be in production, and it is possible that this system will be combined with Cinemascope, the 20th Century Fox entry into the new field of realism in commercial motion pictures. Also, from a quality standpoint one cannot escape the fact that the students in our television classroom actually have a better view of the operative field than the operating surgeon, and certainly a far superior vantage point than would be their lot at the operating table or in a soaring gallery.

Economy.—It would be grossly unfair at this early stage to subject this new pedagogic tool to a cost-accounting analysis, and yet certain obvious factors so clearly indicate its potential for economy that they must be seriously considered. Even now it seems a safe assumption to predict that no new hospital construction need involve provisions for costly multistoried or floor level standing galleries in the operating room area. This alone represents capital savings at least equal to the cost of even an elaborate television installation. Television operating budgets at the moment present a much less clear picture, yet we are optimistic in the belief that the scope and quality of the result obtainable will entirely justify this expenditure of funds.

Immediacy.—This is one of the undeniable plus values of live television. The student in the classroom cannot escape the attention factor of a patient actually being demonstrated at the far end of the coaxial cable. He knows that the electron signal has not been edited for his benefit and that things can and do occur other than as planned. Even a poor instructor can elicit a good audience response under these circumstances, and a good teacher can present his subject with tremendous and unforgettable impact. This effect of immediacy can be exaggerated by the classroom display of the patient's actual electrocardiographic and heart sounds, but these will be required only in special instances since the video image alone is so effective. In this general area of consideration one should not overlook the basic dramatic appeal of the live patient actually being operated on. We suspect that commercial television directors would appreciate such a potent audience stimulus, and certainly there is no reason why the classroom instructor should not exploit this advantage for his student audience.

Intimacy.—Closely associated with the concept of immediacy is the sharp rapport that can be established between the operating room and the classroom. The open two way program audio system that allows conversation between the surgeon and persons in the classroom together with video identification of the operative field in the darkened classroom gives one the impression of being closer to the surgical field than when actually standing at the operating table. Part of this sensation probably results from the absence of the many distractions of the operating room and part from the sharply circumscribed video image, which forces concentration. Regardless of the factors that cause it, this overpowering sense of closeness has been repeatedly observed by students and teachers alike. This together with the sense of immediacy makes it a questionable practice to allow unindoctrinated lay persons to observe opera-

tions in this manner unless those responsible for arranging such experiences are prepared to cope with reactions like those that might be expected if the audience were to be allowed to walk directly into the operating room.

Personalization.—Reflections on the successes and failures of audiovisual aids generally led us to the recognition that the most universally accepted one of the lot is the teacher's own lantern slide. An instructor has a similar reaction about a motion picture film that he may regard as his own. Many times highly regarded lantern slides and motion pictures are rejected by other teachers. It was for these reasons that we have organized our television program planning procedure around the basic concept that it is the teacher's program to do with as he wishes. Similarly, we have tried to organize a television staff that can relieve the teacher of every possible burden that might be posed by the use of this new medium. The result has been that our faculty members are prideful and possessive after having put on a good performance. It is our impression that any policy that dilutes this concept of personalization should probably be avoided.

Flexibility.—The teacher in a television classroom working with the program director in the control room and with the operating surgeon can show as much or as little of a given television scene as he wishes, he may repeat a given scene as many times as he wishes, and he may ask the operating surgeon to demonstrate alternative methods, or perhaps add unplanned content to the program, all in a completely opportunistic fashion limited only by the length of the scheduled class and the number of other program items he wishes to sacrifice. And above all what he does is as the result of his own decision.

Preparation.—There are undoubtedly less expensive and perhaps better ways to insure that busy teachers will consistently carry out adequate class planning, but we submit that a television program such as has been outlined does represent the basis for such insurance and that it is surprisingly easy of acceptance by the faculty. The teacher is forced into the recognition that if he wishes to use television he must at least indicate this desire; otherwise the equipment will not be in operation. Furthermore he cannot escape thoughts referable to what television scenes he would like to present and this cannot be determined without general planning for the interval between scenes. Helpful suggestions by the director assist in smoothing out the program format, and before he realizes it even the most procrastinating instructor finds himself reasonably well organized as to what he actually will present to the class. Fortunately in our department we have not encountered such extreme situations as this; however, almost every member finds himself now devoting more thought to this general area largely because of the stimulation of the television program itself.

Time-Saving Potential.—We have deliberately avoided exploitation of this particular aspect of television programming. With few exceptions we have to date limited the undergraduate classroom use of the medium to those third year students assigned to the department of surgery, these averaging about 25 in number per quarter. We have done this with the thought that much needs to be learned about television before we would be justified in suggesting to the administration that its use be expanded. When entirely satisfactory program techniques have been developed, it is inherent in the method that it can be expanded to encompass a student audience of almost unlimited size, and this audience will not necessarily be confined to the school itself, since microwave or coaxial cable transmission to affiliated hospitals or even to other medical schools is entirely practicable. At just precisely what level of expansion of the present program a saving in teacher time will be effected cannot be clearly defined at present.

From the standpoint of the student a similar situation exists. As stated early in this report we have not regarded televiewing of operations as a substitute for actual student experience at the operating table. Yet it is obvious to any critical appraiser that much of the surgery extern's time is now being wasted in the operating room. Eventually plans for an adequate minimum in person student experience can be developed because of the many details that can be handled so adequately within the television classroom experience. These precious hours saved for the student will allow him substantial opportunities for a more adequate clerkship.

Integration.—The advantages presented by television obviously have appeal to almost all members of the medical school faculty. Yet the substantial initial and continuing costs involved are for a long time likely to preclude that each department can have its own separate installation. Even if sufficient money were available to finance separate departmental projects, it would be almost impossible to staff separately each departmental area. Thus television again represents a solid asset in that it forces the breakdown of rigid departmental teaching boundaries. This is evident in our own program experience wherein many classroom sessions involve representatives from several clinical and basic medical science departments. Incidentally we have made the observation that interdepartmental cooperation of this sort motivated by the faculty members themselves makes for a very productive and harmonious relationship that is probably less likely to be obtained by the superimposition of some artificial administrative formula, no matter how wisely conceived.

Television and Motion Pictures.—We have neither made film recordings of our television programs nor have we projected motion picture films through our television equipment, and until such time as a large experience of this sort has been obtained only rash predictions could be made concerning the future relationship of the two media. In reference to the classroom use of motion pictures we feel that our television program can make use of only critical short film strips rather than of lengthy and comprehensive movies; and, if the latter continue to represent the major output of motion picture producers, they will be usable only as short sequences are extracted therefrom. Concerning the theoretical future of motion pictures in undergraduate medical education in relation to the potentials of television, it is perhaps of some significance that our experienced television teachers now feel that they would prefer to repeat a live telecast with each quarterly presentation of a given subject rather than utilize a kinescopic recording of their own previous program even if it were available.

Why Television Might Fail.—Basically we can recognize two fundamental reasons why television might fail of acceptance in the undergraduate medical school curriculum. First, unimaginative and unsuited television programming such as we first attempted will obviously lead to lack of acceptance. Since this is an experience without clear-cut precedent, whatever program format is decided on as a point for departure must be conscientiously and intelligently subjected to continuing appraisal so that acceptable techniques will eventually be evolved. Secondly, one cannot deny that teachers generally are characterized by an unwillingness to change their familiar teaching methods. We do not mean to deemphasize in any way this very human trait; yet for the many foregoing reasons based on actual experience with a not inconsiderable segment of our faculty, we remain confident about the future role of television.

THE FUTURE

As stated in the beginning of this report, we have been reticent to commit these reflections to the written word, since so little is known about this radically new and different pedagogic tool. Our present perspective of the situation will undoubtedly change as much in the coming year as it has during the one just past, and it is our intention to remain unbiased observers of the unfolding scene. So that we may be prepared to capitalize on every advantage already achieved in the commercial motion picture-radio-television field, plans are already under way to enlarge our television staff with competent representatives of these different areas. This research team will continue to appraise the undergraduate and postgraduate curriculum use of television but in addition will engage many new challenges such as are posed by affiliate hospital and interschool programming, the development of the academic television studio, and the exploration of color kinescopic recording.

5720 Foster Rd. (3).

MEDICAL LITERATURE ABSTRACTS

UNITED STATES

American Journal of Obstetrics & Gynecology, St. Louis

65:233-464 (Feb.) 1953. **Partial Index**

Volume of Uterus During Labor and Its Correlation with Birth Weight: I. Method for Prediction of Birth Weight. P. P. Poulos and J. R. Langstadt.—.p 233.
Release of Anticoagulant During Shock of Experimental Meconium Embolism. C. L. Schneider.—p. 245.
Review of 353 Cases of Premature Separation of Placenta. G. F. Bieber. —p. 257.
*Intravenous Pitocin Infusion in Labor: Report of 100 Consecutive Cases. R. H. Kaufman, S. M. Mendelowitz and W. J. Ratzan.—p. 269.
Role of Adrenalin (Epinephrine) in Labor and Use of an Adrenolytic Drug to Prevent Postpartum Hemorrhage: Observations Based on 3,500 Cases. M. Leff.—p. 278.
Hypertension Following Use of Various Oxytocics. M. A. Carvalho, R. E. Ahearn, J. B. Watrous Jr. and J. S. Rienzo.—p. 282.
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"Combined" and Free Plasma Alpha-Amino Nitrogen in Normal Pregnancy and Toxemia. R. L. Burt.—p. 304.
Oral Use of Phosphorated Carbohydrate Solution in Nausea and Vomiting of Pregnancy. A. B. Crunden Jr. and W. A. Davis.—p. 311.
*Acute Pulmonary Edema in Pregnancy with Report of Case Responding to New Form of Therapy. M. A. Goldmann and N. P. Primiano. —p. 314.
Double Uterus as an Etiological Factor in Repeated Abortion: Indications for Surgical Repair. H. W. Jones Jr. and G. E. S. Jones.—p. 325.
Cul-De-Sac Aspiration and Other Diagnostic Aids for Ectopic Pregnancy: Review of 219 Cases. E. G. Winkler and V. J. Capraro.—p. 340.
Corpus Spongiosum of Urethra: Its Possible Role in Urinary Control and Stress Incontinence in Women. S. G. Berkow.—p. 346.
*Evaluation of Simultaneous Use of Cytology and Biopsy in Diagnosis of Carcinoma of Cervix. A. F. Daro, M. W. Rubenstein and H. Gollin. —p. 364.
Twenty-Year Study of Radiological Treatment of Cancer of Cervix at Montreal General and Royal Victoria Hospitals. E. Percival.—p. 386.
Primary Carcinoma of Vagina: Report of 46 Cases. M. D. Bivens.—p. 390.
Late Results with Interposition Operation. L. Brady.—p. 400.

Intravenous Oxytocin Infusion in Labor.—According to Kaufman and associates oxytocin (pitocin®) or posterior pituitary-U.S.P. (pituitrin®) has been administered by intravenous drip to almost 1,000 parturient women at the Beth Israel Hospital without serious sequelae directly attributable to this procedure. One hundred consecutive cases in which oxytocin was used intravenously as a means of either inducing or aiding labor were studied thoroughly. These included 50 nulliparous and 50 multiparous women. In 46 of the 100 women oxytocin was given to induce labor and in 54 as a means of stimulating labor already in progress. Before the oxytocin drip was started, it was ascertained either by clinical examination, x-ray pelvimetry, or both, that no disproportion existed. The authors conclude that the intravenous administration of oxytocin by dilute infusion is a safe and efficient means of stimulating labor. Its use gives excellent results in the treatment of primary and secondary uterine inertia, and it is felt that this method will radically alter the management of these cases. Intravenous administration of oxytocin considerably shortens the average duration of labor. The use of oxytocin infusion in conjunction with saddle block anesthesia is suggested as a possible therapy for patients with a persistent rim of cervix. Intravenous oxytocin drip provides an efficient means of induction of labor. The most important considerations for success are "ripeness" of the cervix and rupture of the membranes. The oxytocin infusion should be allowed to run until well after the completion of the third stage of labor. Failure to do so will lead to a rise in the incidence of postpartum uterine atony. Oxytocin has no effect on the blood pressure and pulse of the mother. In cases of uterine inertia that do not readily respond to oxytocin, its persistent use is dangerous.

Acute Pulmonary Edema in Pregnancy.—A 43-year-old woman was hospitalized because of hypertension complicating pregnancy. Shortly after admission, the patient, considered to have preeclampsia, was placed on a modified Stroganoff regime. This included the periodic use of morphine sulfate, magnesium sulfate, and 25% dextrose in water intravenously, and ammonium chloride by mouth. Blood pressure dropped and spontaneous rupture of the fetal membranes was noted. A vaginal examination revealed a cephalic presentation. While lying supine upon a delivery table, the patient complained of flushing and a choking sensation. She became dyspneic, cyanotic, and developed severe acute pulmonary edema, continuously emitting pink froth from the nose and mouth. The patient's head was elevated to about 40 degrees and positive pressure oxygen by mask was instituted. Successively, morphine sulfate, 30 mg., aminophylline, 0.5 gm., atropine sulfate, 0.5 mg., sodium amobarbital (amytal®), 0.5 gm., and digitalis (digalen®), one cat unit, were administered intravenously within 15 minutes from onset. Forty minutes after these measures were completed, frothy sputum was still emitted in copious quantity from the delirious patient's mouth. Administration of ethanol-oxygen vapor was then started per mask, utilizing a standard anesthesia apparatus with 35% alcohol in the "ether container." The mask had to be removed frequently to permit removal of collected foam. Improvement was prompt. Within 15 minutes, the foam became more liquid so that more effective expectoration was possible, and the patient was no longer in severe distress. At the end of 30 minutes, she was able to sit up and speak. Bubbling and crepitant pulmonary râles were markedly reduced. Seven hours later, the patient spontaneously delivered a female infant who required tracheal catheterization and oxygen. The authors say that severe acute paroxysmal pulmonary edema is a rare complication of pregnancy that seriously threatens the life of mother and fetus. Other studies have shown that ethanol-oxygen vapor by inhalation is apparently free of contraindications. Its use, independently or in combination with other measures, is recommended in the treatment of acute pulmonary edema occurring during pregnancy.

Cytology and Biopsy in Diagnosis of Carcinoma of Cervix.—It has been standard practice to use both cytological smears and biopsy to obtain a positive diagnosis in suspected cases of carcinoma of the cervix uteri. However, the usual practice is to use one or the other alone during the initial examination, resorting to the one not already used to obtain corroborative evidence. Believing that prompter and more definitive diagnoses might be obtained by using both methods at the first examination, Daro and associates undertook a study of 500 new patients admitted to the Cook County Out-Patient Gynecological Clinic, with a view to ascertaining the accuracy of the diagnoses of cervical carcinoma by initial use of both cytological smear and biopsy. Routine use of both methods on cervices showing some form of lesion (such as erosion), or having a possible suspicious history, revealed 43 cases of squamous carcinoma in 500 patients examined. Initial cytological smear yielded 41 positive diagnoses, and biopsy 39. The false negatives of one test were revealed by the positives of the other. Twenty-eight patients gave initial positive results with both methods. Nine of these cases were classed in stage 1. Fifteen cases were discovered by one method or the other. Ten of these were classed in stage 1. Eight of the 43 cases were clinically asymptomatic. Routine screening by biopsy or cytological smear tests should be done on all eroded or other-

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Titles marked with an asterisk (*) are abstracted.

wise suspicious cervices regardless of clinical history. The cytological cervical smear appears to be the more sensitive of the two tests, especially in early carcinoma. Since it is the simpler to take of the two, it is advocated for routine use on all eroded or suspicious appearing cervices.

American Journal of Psychiatry, New York

109:561-640 (Feb.) 1953

Group Method for Rapid Screening of Chronic Psychiatric Patients. J. L. Rackow, P. J. Napoli, S. G. Klebanoff and A. A. Schillinger.—p. 561.
Some Persistent Problems in Epidemiology of Mental Disorders. H. W. Dunham.—p. 567.
Intensive Treatment of Back-Ward Patients: Controlled Pilot Study. E. F. Galioni and F. H. Adams and F. F. Tallman.—p. 576.
Long-Term Clinical and Metabolic Observations in Periodic Catatonia: Application of Kinetic Method of Research in Three Schizophrenic Patients. A. G. Gornall, B. Eglitis, A. Miller and others.—p. 584.
Prognosis in Frontal Lobotomy by Use of Malamud Rating Scale. W. Freeman.—p 595.
Patterns of Biochemical Organization Related to Morphology. N. S. Kline, N. Wertheimer, C. G. Dyer and others.—p. 603.
Value of Subconvulsive Electrostimulation in Treatment of Some Emotional Disorders. E. A. Hargrove, A. E. Bennett and F. R. Ford. —p. 612.
Comparison Between Unidirectional Current Nonconvulsive Electrical Stimulation Given with Reiter's Machine, Standard Alternating Current Electroshock (Cerletti Method), and Pentothal in Chronic Schizophrenia. D. H. Miller, J. Clancy and E. Cumming.—p. 617.
Psychiatric Findings in Fatigue. R. S. Schwab and T. DeLorme.—p. 621.

Annals of Internal Medicine, Lancaster, Pa.

38:179-432 (Feb.) 1953

Endocrine Regulation of Blood Sugar. J. W. Conn.—p. 179.
Immunologic Aspects of Allergic Conditions. W. C. Spain.—p. 188.
Iron Metabolism: Clinical Evaluation of Iron Stores. A. R. Stevens Jr., D. H. Coleman and C. A. Finch.—p. 199.
Histoplasmosis, with Review of Literature and Report of Case, Proved by Culture, with Involvement of Upper Lobe of Each Lung Simulating Active Bilateral Apical Pulmonary Tuberculosis. J. Monroe and J. M. Kurung.—p. 206.
Failure of Surgery to Relieve Symptoms in Prolapse of Gastric Mucosa Through Pylorus. E. M. Rappaport, A. Alper and E. O. Rappaport. —p. 224.
Failure of Cortisone and ACTH in Treatment of Morphine Abstinence Syndrome. H. F. Fraser and H. Isbell.—p. 234.
Hypertrophic Osteoarthropathy in Pulmonary Malignancies. E. S. Ray and H. P. Fisher Jr.—p. 239.
*Mortality, Morbidity and Treatment of Myocardial Infarction: Review of 455 Cases. R. L. Wooten and F. A. Kyser.—p. 247.
*Observations on Atherosclerosis of Coronary Arteries in Males Under Age of 46; Necropsy Study with Special Reference to Somatotypes. D. M. Spain, V. A. Bradess and G. Huss.—p. 254.
Chronic Anticoagulant Therapy in Recurrent Embolism of Cardiac Origin. S. W. Cosgriff. —p. 278.
*Relationship Between Periarteritis Nodosa and Sarcoidosis. A. Jackson and I. Kass.—p. 288.

Myocardial Infarction.—The occurrence of acute myocardial infarction in 297 men and 158 women between the ages of 30 and 100 admitted to the Evanston Hospital, Illinois between 1946 and 1951 is reported. Of the 455 patients studied, 275 lived and 180 died, a mortality rate of 39.5%. Of the 455 patients, 390 had their first attack of myocardial infarction and 135 of them died, a mortality rate of 34.6%. Of the 65 patients who had more than one attack of myocardial infarction, 45 died, a mortality rate of 69.2%. Of the 390 patients having their first attack of myocardial infarction, 140 received anticoagulant therapy and 250 did not; of the 140, 27 died, a mortality rate of 19.2%; of the 250, 108 died, a mortality rate of 43%. Of the 65 patients who had more than one attack of myocardial infarction, 16 received anticoagulant therapy and 49 did not; 5 of the 16 died, a mortality rate of 31.2%, and 40 of the 49 died, a mortality rate of 81.6%. The incidence of thromboembolic complications in the group of patients who did not receive anticoagulant therapy was 15.6%; it was 7.23% in those who did receive anticoagulant therapy. Of the patients who were given anticoagulant treatment, 15.21% showed some abnormal bleeding. In no patient was the bleeding serious. These results convey the impression that anticoagulant therapy is of value in reducing the mortality rate and incidence of thromboembolic complications in acute myocardial infarction. Although the authors' series does not lend itself to statistical evaluation, because of lack of a control group, the authors feel that the results are significant since this group of patients represents an adequate sample of any hospital population with coronary disease. Of 118 patients in whom congestive heart failure occurred, 89 received digitalis, and 64 of these died, a mortality rate of 71.9%; of the 29 who did not receive digitalis, 23 died, a mortality rate of 79.3%. Although this group is small, it emphasizes the grave prognostic import of heart failure following myocardial infarction. When heart failure is present, digitalis should be administered with careful supervision.

Atherosclerosis of Coronary Arteries in Men.—The degree of coronary atherosclerosis was studied in 111 consecutive necropsies performed on white men between the ages of 20 and 46. Of the 111 men, 38 died suddenly and unexpectedly from coronary artery disease, while in the remaining 73 sudden unexpected violent death was with few exceptions caused by accident, suicide, or homicide. The authors' study was limited to those aged less than 46 because, in this age group, hypertension, diabetes, and obesity do not play so important a part as somewhat later in life. Furthermore, the somatotype of the individual person is more clearly defined and not likely to be distorted by the aging process or chronic illness. Of the 38 men who died of coronary artery disease, 24 were dominant mesomorphs, 3 were dominant ectomorphs, 3 were dominant endomorphs, and 8 were a mixed somatotype. No significant relationships were noted between those with coronary artery disease and their occupation or their ethnic groups. The major anatomic finding in these deaths from coronary artery disease was simple sclerotic narrowing, with varying degrees of obstruction. Unusual findings were thrombi or myocardial infarcts. Inflammation of the coronary arteries as a basis for the later development of sclerosis was observed only once. No significant relationship was noted between the onset of the fatal attack and activity just prior to this, nor was there any correlation to the time of the day or season of the year. Of the 73 apparently healthy men with noncardiac deaths, 30 were mesomorphs, 23 ectomorphs, 7 endomorphs, and 12 mixed somatotypes. One-half of these young men had anatomically significant coronary atherosclerosis. The degree of atherosclerosis of the coronary arteries was definitely greater in the dominant mesomorphs than in the dominant ectomorphs. Up to the time of their sudden violent death, these men were symptom free and might have been numbered among the normal controls in clinical studies on cholesterol. This would tend to obscure further the selection of proper controls in studies of this type. No relationship was noted between obesity and coronary atherosclerosis. A study of the heart weight in all 111 cases did not reveal any differences in those with coronary artery disease as compared with those with relatively uninvolved coronary arteries. No anatomic differences in the pattern of coronary circulation were noted among the various somatotypes, nor were any noted between those with and those without coronary artery disease.

Periarteritis Nodosa and Sarcoidosis.—Five cases of periarteritis nodosa in men between the ages of 21 and 61 with diagnosis confirmed by necropsy, and one case of sarcoidosis in a 22-year-old man with diagnosis confirmed by biopsy are described. The similarities of the etiological, clinical biochemical, histological, and therapeutic aspects of both entities are discussed. It is considered very likely that periarteritis nodosa and sarcoidosis are not two distinct and separate entities but constitute different stages of the same disease entity. This entity should be labeled "hypersensitivity granuloma," acute or chronic, perivascular or extravascular. The so-called collagen diseases are a heterogenous group requiring a more concise classification.

Arizona Medicine, Phoenix

10:47-84 (Feb.) 1953

Stab Wounds of Bladder Complicated by Wounds of Small Intestine and Mesentery. L. Manoil.—p. 47.
Meckel's Diverticulum. J. L. Whitehill.—p. 50.
Conservative Surgical Procedures in Treatment of Pulmonary Granulomas. C. T. Read.—p. 53.

FOREIGN

Archiv für klinische Chirurgie, Berlin

274:95-174 (No. 2) 1953. **Partial Index**

Primary Pulmonary Carcinoma. J. Drewes and K. H. Willmann.—p. 95.
*Treatment of Acute Osteomyelitis: Investigations on Penicillin Content in Bone Marrow. E. Juch.—p. 107.
Conservative Treatment of Esophageal Lesions Produced by Caustic Substances and Their Sequelae. E. Schiedt.—p. 113.
Intravenous Urography in Case of Tumor at Neck of Bladder. E. Friedhoff.—p. 132.
Roentgenologic Examination of Indurated and Calcified Pericardium. B. Schlegel and G. Heberer.—p. 139.
Treatment of Disturbances in Mineral Metabolism of Bone, with Special Consideration of Retarded Healing of Fractures. M. Frank and F. Heppner.—p. 159.

Penicillin Content in Bone Marrow During Treatment of Osteomyelitis.—Juch emphasizes that systemic penicillin therapy alone can be effective in osteomyelitis only if there is as yet no abscess formation. If a considerable amount of pus has accumulated, surgical measures to remove the pus are necessary. Although various therapeutic measures produce favorable results in acute osteomyelitis, a certain number of acute cases seem to become chronic. These failures are at least partly due to inadequate doses of penicillin or to the fact that the pathogenic organisms become resistant to penicillin. For penicillin therapy to be effective, it is absolutely necessary to achieve an adequate concentration of penicillin even in the medullary cavity; if penicillin concentration is insufficient, increase in the resistance of the causative organisms is likely to result. Juch compared the penicillin content in the bone marrow and in the spongy bone substance with that in the blood during the systemic administration of the antibiotic in 18 patients undergoing bone operations. The penicillin was administered intramuscularly. The penicillin content in the bone marrow was always lower than in the serum, in one instance it was only the forty-eighth part of that in the serum, the comparative figures being 0.12 and 5.76 units, respectively. The results of these investigations suggest that in acute hematogenic osteomyelitis, the penicillin content of the blood cannot be regarded as the criterion of the bacteriostatic effect. In order to obtain bacteriostatic concentrations in the bone marrow, it is necessary either to increase the systemic doses of penicillin or to introduce the antibiotic also into the medullary cavity.

Archivio Italiano di Urologia, Bologna

26:1-90 (Jan.) 1953. **Partial Index**

*Study on Histological Lesions and Pathogenesis of "Lethargic Kidney." B. Terruzzi.—p. 3.
Renal Hypoplasia and Congenital Megaureter. P. Fabris.—p. 13.
Behavior of Stroma of Adrenal Gland in Adenomatous Prostatic Hypertrophy. E. Lino.—p. 33.

"Lethargic Kidney."—"Hibernating kidney" and "lethargic kidney" are terms used to describe a syndrome characterized by complete but transitory functional inhibition of one kidney. In the last two years two patients with this syndrome of three and four months' duration that had been caused by ureteral lithiasis were operated on at the urologic clinic of the University of Milan. Nephrectomy was necessary because of adhesions between the calculi and the ureteral walls. Macroscopically there were no lesions in the kidneys, but microscopy revealed irreversible changes in the cortical area. These alterations were severer than those in the medullary area, suggesting that a prolongation of the syndrome may eventually cause atrophy and sclerosis of the organ. This is contrary to the concept that "lethargic kidney" is a purely functional disturbance. Although a definite hypothesis of the origin of this anomaly is impossible from these two cases, the author suggests that it begins as a functional alteration of reflex origin and only later is complicated by organic alterations. Certain stimuli (mainly calculi) produce ischemia of the cortical area by causing peripheral vasoconstriction of the interlobular arteries; the arterial blood is shunted directly into the medullary veins or into those glomeruli near the medulla. The circulation to the cortex is therefore decreased to the point where cellular damage occurs. The longer the syndrome lasts, the severer the impairment. This hypothesis was confirmed by the location and the nature of the lesions in the two patients.

British Journal of Experimental Pathology, London

34:1-118 (Feb.) 1953. **Partial Index**

Effect of Inflammation and Other Factors on Movement of Radioactive Glass Particles from Peritoneal Cavity. A. D. Bangham, P. N. Magee and S. B. Osborn.—p. 1.
Study of Antigenic Components of Kidney Tissue. A. G. S. Hill and B. Cruickshank.—p. 27.
Action of Penicillin and Terramycin on Pneumococcal Infection in Normal and Leucopenic Rabbits. J. L. Gowans.—p. 35.
Purification of Antitoxin by Absorption of Non-Antitoxic Antibodies. C. G. Pope and M. F. Stevens.—p. 56.
Immuno-Chemical Study of Isolated Serum Protein Fractions. C. Wunderly, E. Gloor and A. Hässig.—p. 81.
Effect of Dicumarol on Ascorbic Acid Content of Liver and Adrenal Glands. N. Sapeika.—p. 88.

British Journal of Nutrition, London

7:1-196 (Nos. 1 & 2) 1953. **Partial Index**

Nitrogen Metabolism in West African Children. B. Bray.—p. 3.
Effect of Cystine and Methionine, Added Separately or Together, on Biological Value of Proteins of Dried Skim Milk. K. M. Henry and S. K. Kon.—p. 29.
Method for Determining Nutritive Value of Protein by Its Effect on Liver Protein. K. M. Henry, H. W. Kosterlitz and M. H. Quenouille.—p. 51.
*Radiological Study of Rate of Passage of Brown and White Bread Through the Digestive Tract of Man. R. A. McCance, K. M. Prior and E. M. Widdowson.—p. 98.
Serum Chemistry in Uncomplicated Kwashiorkor. R. F. A. Dean and R. Schwartz.—p. 131.
Social and Food Survey of the Elderly, Living Alone or as Married Couples. E. R. Bransby and B. Osborne.—p. 160.

Passage of Brown and White Bread Through the Human Digestive Tract.—Six subjects, three men and three women, whose ages ranged from 25 to 35 years, took part in this experiment. There were two experimental periods, in one of which the diet consisted largely of brown bread and in the other of white bread. The interval between the two periods varied from one to seven weeks. The flours used for baking the breads for these experiments were milled at a Cereals Research Station. They were of two extractions, 100% (brown) and 70% (white). They were not treated with any improver or bleaching agent, and they did not contain added calcium carbonate. The flour of 100% extraction contained 1.82% fiber; the fiber in the white flour was negligible. Bread was baked from the experimental flours with yeast in the ordinary way. The passage of the breads through the alimentary tract was studied roentgenologically by the addition of a small quantity of barium sulfate to the bread. The brown bread appeared to stimulate a greater secretion of saliva or of gastric juice or of both than did the white bread. The brown bread was evacuated from the stomach and passed through the small intestine more rapidly than the white bread. The residue from the brown bread, when in the ileum and in the colon, appeared to be greater than that from the white bread. The residue from the brown bread left the colon 24 hours sooner than that from the white bread.

British Journal of Radiology, London

26:57-112 (Feb.) 1953

The Two Million Volt Van de Graaff Generator Installation Designed for Rotation Therapy at Royal Cancer Hospital. B. M. Wheatley, P. R. Steed, E. W. Savage and others.—p. 57.
Presentation of Radiograph. R. Ollerenshaw.—p. 73.
Some Contributions of Radiology to Pathology of Female Breast. J. Gershon-Cohen and H. Ingleby.—p. 87.
Radiological Observations of Stomach Changes Accompanying Threat of Injection, and Further Data on Normal Variation of Peristaltic Rate. H. Jungmann and P. Venning.—p. 93.
Irregularities of Iodine Assimilation by Follicles of Rat Thyroid. C. G. Clayton.—p. 99.

British Medical Journal, London

1:415-466 (Feb. 21) 1953

Definition and Assessment of Respiratory Function. K. W. Donald. —p. 415.
*Sympathetic Nerves and Eclampsia. G. W. Theobald.—p. 422.
Psychiatrist and Compensation Neuroses. J. Dunne.—p. 427.
Clostridial Myositis Associated with Injections of Sodium Sulphathiazole. S. Shaw and W. E. Evans.—p. 429.
Pethidine and Triple Response. B. L. Finer and M. W. Partington. —p. 431.
The "Reflux" Factor in Erythrocyte Sedimentation Tests. W. D. Alexander.—p. 433.
Surgical Method for Management of Patients with Portal Cirrhosis: Preliminary Report of Case. C. A. Montagnani.—p. 435.
Trichlorethylene in Labour. E. E. Rawlings.—p. 436.

Sympathetic Nerves and Eclampsia.—According to Theobald, a woman in whom the eclamptic syndrome does not manifest itself before the 38th week of her first pregnancy almost invariably has subsequent normal pregnancies. If, however, the preeclamptic syndrome occurs at or about the 30th week of pregnancy, notwithstanding adequate antenatal care, the same symptomatology is likely to recur in subsequent pregnancies and to manifest itself at about the same period of gestation. The fetus, moreover, is likely to be very small. It is suggested that adequate nutrition of the placenta, particularly when it is being formed, is essential to a normal pregnancy, and that in a few cases the internal iliac arteries are too small to provide adequate blood supply to the uterus in the presence of normal arterial tone. It occurred to the author that denervation of the internal iliac vessels might in certain cases improve the blood supply to the placenta and prevent the recurrence of toxemic symptoms in succeeding pregnancies. Seven women were subjected to denervation of the internal iliac vessels. Three subsequently became pregnant and all three were delivered of healthy infants following an uneventful pregnancy. The first patient, a 33-year-old woman, had previously had two stillbirths, and the second patient, a 38-year-old woman, three stillbirths. The third 40-year-old patient had had a fulminating attack of preeclampsia at the 22nd week of her first pregnancy and possessed but one kidney. It is most improbable that any of these three patients could have given birth to a living child, and the fact that each of the three had a healthy infant can reasonably be attributed to the stripping and denervation of the internal iliac vessels carried out to such an extent that even the obliterated hypogastric arteries (lateral umbilical ligaments) were cleaned. Large amounts of nervous and other tissue removed from the blood vessels were fulgurated with the diathermy point. In some cases presacral neurectomy was performed before the abdomen was closed, but it was not performed in the first successful case and is most likely unnecessary. As a result of these observations the author states that denervation of the internal iliac vessels is a justifiable and worth-while procedure in women who have twice suffered from preeclampsia, associated with death of the fetus, at or about the 30th week of pregnancy. It is possible that denervation of the internal iliac artery on either side will suffice, without stripping the veins, and if this be the case the operation will be shorn of its main danger and could be advocated more freely. No evidence was obtained to suggest that the preeclamptic syndrome can be attributed to afferent nerve impulses arising in the uterus. The author's cases provide no support for the view that long-sustained hypertension and proteinuria during pregnancy cause either chronic nephritis or hypertension, or can be attributed to a "renal shunt."

Lancet, London

1:353-402 (Feb. 21) 1953

Body-Fluid Depletion. D. A. K. Black.—p. 353.
Dosage of Antibiotics: Relation Between In-Vitro and In-Vivo Concentrations Effective in Urinary-Tract Infections. J. C. Gould, J. H. Bowie and J. D. S. Cameron.—p. 361.
Anatomical Approach to Poliomyelitis. D. H. M. Woollam and J. W. Millen.—p. 364.
Treatment of Intermittent Claudication with Vitamin E. M. Hamilton, G. M. Wilson, P. Armitage and J. T. Boyd.—p. 367.
Automatic Fractional Analysis of Expired Air as Clinical Test. A. C. Dornhorst, S. J. G. Semple and I. M. Young.—p. 370.
Outbreak of Benign Meningo-Encephalitis: Isolation of Coxsackie Virus. J. F. Galpine and A. D. Macrae.—p. 372.
Unusual Type of Hernia. S. Howard.—p. 376.

Minerva Medica, Turin

44:101-124 (Jan. 17) 1953. **Partial Index**

Pathogenesis of Renal Diabetes. G. Monasterio and G. Gigli.—p. 101.
Onset of Biliary Colics in Classical and Atypical Hemolytic Jaundice. G. Dal Santo.—p. 107.
*Gastric Ulcer and Its Malignancy. F. Soave.—p. 112.

Gastric Ulcer and Its Malignancy.—During the last four years, 378 patients with gastric ulcer were seen at the University of Genoa surgical clinic and 352 of these were operated on by the Rejchel-Polya technique. The mortality rate at operation was 1.5%. Microscopy revealed that in 127 (17%) of these patients the ulcer was malignant and yet in all of them benign peptic ulcer had been diagnosed. Only 40% of these patients were still living at the time of writing but their general condition was poor and suggested a short survival period. The author suggests that strict diet and medical treatment should be begun whenever the roentgenograms reveal a gastric ulcer, 1.5 cm. in diameter, in a person from 30 to 40 years old who has had and has dyspepsia associated with hyperchlorhydria. After three to four weeks of this regimen if the ulcer is benign the subjective symptoms will have disappeared, and the roentgenograms will show that the margins of the ulcer are less evident and its diameter has decreased. In this case, this regimen should be continued for 50 to 60 days, after which the ulcer should be cured. If, on the other hand, the ulcer picture has not improved after the first few weeks, the patient should be operated on without delay since the lesion might be malignant. The sooner the decision is taken the better will the late results be. According to the author cancer does not develop in a benign ulcer but the ulcerous lesion itself is initially neoplastic. He could see histologically in many cases that the tissue where the ulcer occurred was already invaded by the adenocarcinoma at a time when a macroscopic finding of malignancy was not yet possible. Early surgical intervention in these patients will avoid perforation of the ulcer, sudden hemorrhage, and malignancy of the ulcer.

Pédiatrie, Lyon

8:1-148 (No. 1) 1953. **Partial Index**

Present-Day Aspects of Congenital Syphilis in Provençal Region. P. Giraud and R. Bernard.—p. 7.
*Treatment of Primary Infection in Children. P. Pierret, A. Breton and J. Ratel.—p. 23.
Pyloric Stenosis and Hypokaliemia. R. Sacrez, P. Beyer and P. Fontaine. —p. 51.
"Quinto-Tracheal" Sign of Whooping-Cough. M.-A. Raybaud.—p. 67.

Primary Tuberculous Infection in the Child and Its Treatment.—Antibiotics are of little value in treating primary infection in the child. The lymph node lesions soon become caseous and offer ideal conditions for the development of drug resistance. The encapsulated bacilli remain viable and may subsequently be disseminated by way of the blood or the lymph. Hasty and inadequate use of antibiotics may produce drug resistance and thus destroy the efficacy of these products in later, severe manifestations of the disease, for which they are the only effective treatment. Children under 15 years of age presenting radiological or clinical signs of initial tuberculosis traditionally considered transient or benign should not be placed in institutions (unless others in the family have tuberculosis) or treated with antibiotics, but should be kept under close observation for two years. Patients with severe forms of the disease, especially micronodular, should be treated at once. They may as a rule be given streptomycin for six months in combination with *p*-aminosalicylic acid for 12 months. The period of administration should not be curtailed, because the efficacy of streptomycin treatment depends essentially upon its length. Borderline cases require very careful consideration; the present tendency is toward caution in the use of antibiotics. Diagnosis should be based on the fullest possible study carried out at a hospital, and treatment must be individualized; the child's age and constitution, and the conditions of infection all modify the general indications for therapy and should be taken into account.

BOOK REVIEWS

The Anatomy of the Nervous System: Its Development and Function. By Stephen Walter Ranson, M.D., Ph.D., Revised by Sam Lillard Clark, M.D., Ph.D., Professor of Anatomy, Vanderbilt University School of Medicine, Nashville. Ninth edition. Cloth. $8.50. Pp. 581, with 434 illustrations. W. B. Saunders Company, 218 W. Washington Sq., Philadelphia 5; 7 Grape St., Shaftesbury Ave., London, W.C.2, 1953.

In the 33 years since the first edition was published, this book has gained a secure place among textbooks on anatomy. After the senior author's death, a partial revision for the eighth edition was carried out by Dr. Clark in 1947. He has now made further and more extensive changes, adding material on the significant advances of recent years, new illustrations, and rewriting completely many portions of the text. The present edition is, therefore, practically a new publication. Few authors have taken so much care in the revision of a standard work as Dr. Clark has; his efforts have paid rich dividends. Arrangement, style, format, and illustrations are excellent. Previous editions become obsolete when such full and painstaking revision is accomplished.

Die Operation in der Sprechstunde. Von Dr. Richard Goldhahn. Bearbeitet von Prof. Dr. G. Jorns. Chefarzt des städt. Krankenhauses Arnstadt i. Thür. Fifth edition. Cloth. 9.50 marks. Pp. 192, with 75 illustrations. Georg Thieme, Thomaskirchhof 21, (10b) Leipzig C.1, 1952.

This small book is written primarily for the general practitioner. To evaluate and criticize its contents properly, one must be familiar with "office practice" as it is conducted in some parts of Germany. There the average general practitioner is equipped to do more in his office than would be expected of him in the United States. For example, repeated diagnostic punctures for subphrenic abscess would not be condoned in the U. S., particularly if conducted in a physician's office. Such a practice would be condemned even in a well-equipped hospital.

Other procedures described, such as drainage of breast abscesses, tracheostomies, drainage of chest empyemas, pericardial punctures, and finger amputations, would require a greater armamentarium than is found in the average physician's office in the U. S. If the term Sprechstunde implies a small clinic or sanitarium, then the procedures might be permissible.

Several of the illustrations are inadequate. On page 22 the figure showing arteries of the skin of the head is poorly executed and reproduced and has no legend. The illustration of the facial nerve on page 33 is incorrect and lacks any practical value. The figure on page 91 presents a method of local anesthesia for surgery on breast tumors; multiple puncture points are advocated, which is a procedure contrary to present thinking in regard to trauma and tumors.

This book may be helpful to those who have a good reading knowledge of German and are interested in diagnostic procedures.

Public Health Education: Its Tools and Procedures. By H. E. Kleinschmidt, M.D., and Savel Zimand. Cloth. $4.50. Pp. 302, with illustrations. The Macmillan Company, 60 Fifth Ave., New York 11, 1953.

This book is written by two authors who have a just claim to the title of pioneers in health education. It is a comprehensive discussion of health education of the adult population outside of formalized teaching institutions, such as graduate schools and universities. Both authors have had extensive experience in obtaining the attention of the general public for the purpose of teaching about health. This experience is reflected in the character of the book, which deals more with philosophies than with the tools and procedures its subtitle might lead the reader to expect. There are, nevertheless, some good explanations of procedure, notably with regard to the spoken word, the role of the volunteer, and the use of group discussions and community organization for health education.

The book is interestingly illustrated with sketches by Dr. Kleinschmidt, which he calls "visual shorthand," and which he says anybody can learn, a point on which his optimism might be questioned. This is a very readable book and should be useful to workers in the field of public health education. It might be criticized in that it gives credit for pioneering only to a limited circle of the older health educators and not even to all of them. The sections on radio and television are inadequate, reflecting lack of experience with these media. These weaknesses do not detract too much from the over-all value of the book.

Pharmacology and Toxicology of Uranium Compounds: Chronic Inhalation and Other Studies. Edited by Carl Voegtlin, Ph.D., and Harold C. Hodge, Ph.D., Professor of Pharmacology and Toxicology, School of Medicine and Dentistry, University of Rochester, Rochester, N. Y. National Nuclear Energy Series, Manhattan Project Technical Section, Division VI —Volume 1. [Parts 3 and 4]. Cloth. $18. Pp. 1087-1778; 1779-2466, with illustrations. McGraw-Hill Book Company, Inc., 330 W. 42nd St., New York 18; 95 Farringdon St., London, E.C.4, 1953.

This account of the pharmacology and toxicology of uranium compounds comprises two volumes of a series that has been prepared as a record of the research work done under the Manhattan Project and the Atomic Energy Commission. The editors are well qualified in the field of toxicology and have been involved personally in the research work on uranium and many other poisons. The book covers all phases of research on uranium compounds, and, from the scope and quantity of the contents, it is apparent that the accumulation and editing of the material required considerable time and effort. Considering the current importance of uranium and the number of people engaged in its practical use, the publication of available data on uranium compounds in one reference source is a worth-while project. The book has no value as a textbook or as a general reference. Insofar as format, type, and illustrations are concerned, this book is considerably below average.

British Planning and Nationalization. By Ben W. Lewis. Cloth. $3. Pp. 313. Twentieth Century Fund, 330 W. 42nd St., New York 18; [George Allen & Unwin, Ltd., Ruskin House, 40 Muesum St., London W.C.1]. 1952.

Professor Lewis states in the preface to this volume on the activities of the Labor government of Britain from 1945 to 1951 that he has "much sympathy for what the Labor government is trying to do." He describes the nationalization of the coal, transport, electric power, and iron and steel industries, town and rural planning, the distribution of industry, the National Health Service, housing, and agriculture. No attempt has been made to cover all of the changes introduced by the Labor government. The author states that British planning "is eminently pragmatic." He believes that there has been no development of a long-term plan for society. The Labor government acted in a setting of democratic pressures, war-born shortages, and restrictions developed in a distinctly British manner during the 1930's and 1940's under Conservative and coalition governments.

In the discussion of each subject a short history of the role of government in the field before the elections in which the Labor party came into power is given, which, in some cases, includes events as far back as World War I. Of the nationalization of industry and the socialization of health services and other social services, the author states that only two were essentially controversial in 1951, the year he visited Britain to study the Labor government program.

While there are many conflicts on the proper action to be taken in regard to administration, distribution of services, and restrictions, the philosophy of government intervention, with particular reference to these fields (excepting the iron and steel industry and highway transport services), is whole-

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The reviews here published have been prepared by competent authorities and do not represent the opinions of any official bodies unless specifically stated.

heartedly accepted by all three political parties. The author says, "It is almost certain that public opinion in Britain would have demanded nationalization of coal, railways, electricity distribution, gas, airways and the Bank of England within the first ten or fifteen years after the war, whether by a Labor government or by a government of different complexion." In examining the changes between 1945 and 1951, he states: "Labor has pointed with pride to results that might equally have occurred under a different government; and has been held to account for conditions that it did not produce, and for failing to keep promises it never made."

This volume presents detailed information on the changes it discusses, such as the National Health Service, but makes little attempt to evaluate the programs. It is more concerned with the climate of British public opinion, and the advocates and critics of each program are quoted frequently. While the author may be in sympathy with the aims of the Labor government, he does not accept its methods uncritically. He believes that the majority of the programs will continue, even under succeeding Conservative governments, and that it is too early to evaluate the achievements and fumbles of the six year period of Labor control.

Contributions toward Medical Psychology: Theory and Psychodiagnostic Methods. Volumes I and II. Edited by Arthur Weider, Ph.D., Associate Professor of Medical Psychology, Department of Psychiatry and Mental Hygiene, University of Louisville School of Medicine, Louisville, Ky. With foreword by David Wechsler, Ph.D., Associate Clinical Professor of Medical Psychology, New York University College of Medicine, New York. Cloth. $12 per set. Pp. 455; 459-885, with 101 illustrations. Ronald Press Co., 15 E. 26th St., New York 10, 1953.

This is a compendium of articles on those protean aspects of human behavior that simultaneously interest the psychologist, sociologist, anthropologist, and physician and, therefore, constitute the broad scope of psychosomatic medicine. Volume 1 deals with the theoretical, developmental, cultural, diagnostic, and therapeutic interrelationships of psychology and medicine. Volume 2 contains detailed technical reviews of various test procedures for levels of maturation, intellectual functions and impairments, fantasy projections, vocational interests, and total personality patterns. With few exceptions, the author of each contribution is one of the foremost authorities in his field, and, despite the wide range of material, the editing and organization are so effective that there is little overlap, repetition, or discontinuity. Full author and subject indexes facilitate reference and make the work a valuable addition to the library of anyone professionally interested in detailed current knowledge of psychological medicine.

A Manual of Clinical Allergy. By John M. Sheldon, M.D., Professor of Internal Medicine, University of Michigan Medical School, Ann Arbor, Robert G. Lovell, M.D., Instructor in Internal Medicine, University of Michigan Medical School, and Kenneth P. Mathews, M.D., Assistant Professor of Internal Medicine, University of Michigan Medical School. Cloth. $8.50. Pp. 413, with illustrations. W. B. Saunders Company, 218 W. Washington Sq., Philadelphia 5; 7 Grape St., Shaftesbury Ave., London, W.C.2, 1953.

The senior author of this work is prominent in the practice and teaching of allergy. In addition to his two associates, who are internists interested in allergy, there are a number of contributors in special fields. This able team has produced a unified manual on allergy, containing a wealth of information stated with clarity and simplicity. The material includes the techniques involved in diagnosis (scratch, prick, intracutaneous, and patch tests, elimination diets, diet diaries); the techniques in treatment, especially injection therapy; the drugs useful in allergy, the classification of antihistamines, the composition of useful proprietary preparations and common prescriptions; techniques in the preparation of allergens, including vaccines; techniques for pollen identification and pollen counting; and the technique for mold identification. There is even a chapter on office planning for the management of allergy patients. Each chapter contains a moderate number of references as footnotes.

The weakness of this manual is, as the authors acknowledge in the preface, that, by itself, it is inadequate for its intended readers. The authors state that the book is "prepared primarily for the physician interested in devoting part of his time to the treatment of allergy patients, or in establishing an allergy practice." The proper care of the allergic patient requires a correct etiological diagnosis, which is established primarily by the intelligent use of a relevant, complete, and careful history. Without a good history, even the most careful and extensive skin tests frequently lead to confusion, rather than clarification of the etiological diagnosis. In this book of over 400 pages, only 6 pages are devoted to methods for obtaining a history of the etiology of the allergic condition. Occasionally, under various clinical entities, a brief paragraph supplements these few pages. Theoretical concepts are discussed only in the first chapter of barely more than three pages.

Recognizing this lack, the authors advise that the manual be used in conjunction with textbooks and journals on allergy. If the beginner in allergy for whom this work was written will follow this direction, he will find the book valuable, not only for technical procedures but also for much detailed and practical information on the practice of allergy.

Die Ernährung: Physiologie, Pathologie, Therapie. Herausgegeben von Dr. Dr. Konrad Lang, o.ö. Professor der physiolog. Chemie, Universität Mainz, und Dr. Rudolf Schoen, o.ö. Professor für innere Medizin, Universität Göttingen. Bearbeitet von R. F. A. Dean, et al. Cloth. 58 marks. Pp. 624, with 61 illustrations. Springer-Verlag, Reichpietschufer 20, Berlin W. 35 (West-Berlin); Neuenheimer Landstrasse 24, Heidelberg; Göttingen, 1952.

The 14 chapters of this book are by 12 different authors and deal with the chemistry of nutrients, the physiology of nutrition, the preparation and conservation of foods, malnutrition, dietetics, nutritional problems of the infant, administration of national food programs, physiology of vitamins, symptomatology and therapy of avitaminosis A, symptomatology and therapy of avitaminosis E, the B vitamins, clinical aspects of vitamin C deficiency, diseases related to calcium deficiency, and vitamin K. Readers who find it hard to keep up with the development of biochemistry will especially appreciate the opening chapter, which is an up-to-date, coherent presentation of fundamentals. The chapter on national food problems gives a lively account of British experience during World War II. The book is provided with a few select bibliographic references, is well illustrated and well printed, has both author and subject indexes, and is highly commendable.

A Television Policy for Education: Proceedings of Television Programs Institute Held under Auspices of American Council on Education at Pennsylvania State College, April 21-24, 1952. Edited by Carroll V. Newsom, Director of Institute. Cloth. $3.50. Pp. 267, with 4 illustrations. American Council on Education, 1785 Massachusetts Ave., N.W., Washington 6, D. C., 1952.

This is a report of proceedings at the meeting of the Television Programs Institute, held under the auspices of the American Council on Education at Pennsylvania State College in April, 1952. The views expressed come from a wide variety of American and Canadian sources and are worth the consideration of everyone who has an interest in educational television. This refers particularly to physicians who are medical society officers and who are alert to the necessity for prompt, intelligent, and adequate use of television by the medical profession. The participants in the meeting were outstanding leaders in television, and their ideas are worthy of serious consideration.

A Vitamin Digest. By Guy W. Clark, Technical Director, Lederle Laboratories Division, American Cyanamid Company, Pearl River, New York. Cloth. $6.50. Pp. 254. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, 1953.

Nearly every aspect of vitamin study to date is summarized in this book. It includes data on the chemistry and nutritional values of vitamins along with information on their discovery and development. Each chapter is adequately documented for those who wish more detailed information. Advanced nutrition students and teachers who want a brief, comprehensive story of the vitamins will find this digest especially valuable as a supplementary reference.

QUERIES AND MINOR NOTES

SPINAL FLUID CELL COUNT IN POLIOMYELITIS

TO THE EDITOR:—*In the usual case of poliomyelitis the spinal fluid shows a high cell count. About how long after recovery does it take for the spinal fluid cell count to return to normal?*

L. H. Miller, M.D., Pana, Ill.

This inquiry was referred to two consultants, whose respective replies follow.—ED.

ANSWER.—Although in the usual case of poliomyelitis there is an increased cell count in the spinal fluid, the total number of cells per cubic millimeter is often less than 100. Within three weeks of the onset of poliomyelitis, the cell count often will have returned to normal.

ANSWER.—The spinal fluid cell count is reported to be highest in the first week after onset of poliomyelitis and to return to normal within four weeks. Recent data on this subject, with references to earlier literature, may be found in the references below.

REFERENCES

Ford, G. D.; Eldridge, F. L., and Grulee, C. G., Jr.: Spinal Fluid in Acute Poliomyelitis: Changes in Total Protein and Cell Counts on Serial Study, Am. J. Dis. Child. **79**:633-639 (April) 1950.

Campbell, W. G.: Diagnosis of Poliomyelitis, Arizona Med. **8**:25-36 (Jan.) 1951.

IRRADIATION FOR BENIGN UTERINE HEMORRHAGES

TO THE EDITOR:—*How much x-ray therapy is needed to produce permanent sterility in a woman of 34? The anteroposterior diameter of her lower abdomen or pelvis is 16 cm. She has had 300 r (half-value layer 1 mm. Cu) through 12 by 15 cm. ports over each of four fields, the right and left anterior and right and left posterior pelvic regions, directed medially at an angle of 30 to 35 degrees from the vertical. The reason for this treatment is excessive menorrhagia.*

M.D., Kansas.

ANSWER.—Irradiation should be used in benign uterine hemorrhages of puberty and maturity with considerable caution, preferably to achieve a temporary amenorrhea and then only if the following conditions prevail: (1) if the uterine hemorrhages are benign and have resisted medical treatment and curettage; (2) if cancer has been ruled out by diagnostic curettage; and (3) if the history and results of pelvic examination are free from evidence of previous infection. It is assumed that these conditions obtained in the case in question and that the factors of the roentgen ray productivity are as follows: 200 kv., focal skin distance 65 cm., 25 ma., 1 mm. Cu and 1 mm. Al filter, and minimum wave length 0.67 A. Since the anteroposterior diameter is 16 cm. and the oblique distance to the midpelvis from the four designated fields is not stated, it will be assumed that this distance is, arbitrarily, 11 cm. At this depth, employing a 12 by 15 cm. field, 40% of the dose in air plus backscatter is obtained. Therefore, 480 r will be delivered to the midpelvis. This would be adequate for permanent castration if delivered in one treatment; however, delivered over a four day period, the effect would be considerably reduced. In a 34-year-old woman, 289 r to the midpelvis through two fields, anterior and posterior, 15 cm. square, sacral and suprapubic, is an adequate dose for a permanent ovarian castration.

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically so stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

PENICILLIN AND VITAMIN DEFICIENCY

TO THE EDITOR:—*Does penicillin when given orally over a long period, as in rheumatic fever prophylaxis, have the same effect on the vitamin-elaborating intestinal bacteria as have aureomycin, oxytetracycline (Terramycin), and chloramphenicol? Is administration of supplemental vitamins indicated in patients receiving penicillin orally?*

Richard L. Truin, M.D., Ocean Beach, Va.

ANSWER.—Although penicillin administered by mouth produces profound changes in the intestinal flora, mainly by eliminating some of the gram-positive components, such as some strains of fecal streptococci, this effect is short-lived. Within a few days of the time that penicillin administration is started, the members of the intestinal flora that have been suppressed usually begin to grow again, so that, even though penicillin administration may be continued, the organisms in the bowel are much the same as those present before the antibiotic was taken. For this reason, penicillin would not be suspected of having much effect on the bacteria that elaborate vitamins. Furthermore, the only vitamin of importance in the human economy that is produced by members of the intestinal flora is vitamin K. This is very different than the situation in herbivorous animals in which various bacteria, especially members of the genus Flavobacterium, elaborate various components of the vitamin B complex. This consultant has never seen a patient who has taken penicillin orally, even for a long period, in whom there has been evidence of vitamin K deficiency or any other vitamin deficiency. Unlike aureomycin, which may produce increased urinary excretion of riboflavin and so be potentially capable of producing a deficiency of this vitamin, penicillin, as far as is known, does not increase the loss of any vitamins in the urine. The acute glossitis that sometimes occurs when penicillin is taken by mouth is usually due to a direct irritant effect and is rare when penicillin is swallowed, occurring much more commonly when the drug is administered in the form of lozenges or troches. It would not appear necessary, therefore, to administer supplementary vitamins to patients who are receiving penicillin orally, even for long periods.

DIFFERENTIATION BETWEEN RAYNAUD'S AND BUERGER'S DISEASES

TO THE EDITOR:—*What is the best treatment for Raynaud's disease? How may it be differentiated from Buerger's disease (thromboangiitis obliterans)?*

Ethel C. Russell, M.D., New Paltz, New York.

ANSWER.—Raynaud's disease can be defined as a symmetrical vasospasm of fingers and toes showing a triphasic (white, blue, red) color change in the early stages but no organic vascular occlusion between attacks. In the late stages, sclerosis of the fingertips occurs, with small patches of ulceration or gangrene and with evidence that the digital arteries are occluded. Raynaud's disease is very rare, but Raynaud's phenomenon, i. e., the triphasic color reaction, occurs frequently in arteriosclerosis, Buerger's disease, and syphilitic arteritis and during cold agglutination of red cells and cryoglobulinemia, a condition in which certain globulins in the blood are precipitated in a cold environment. When all these causes are excluded and specifically treated, there remains a small group of patients with Raynaud's disease, mostly young, anemic, constitutionally inferior women, often with multiple glandular disturbances. When the vasospasm is frequent, occurs more and more often, and when trophic changes develop, extensive sympathectomy is indicated. No medical treatment is effective.

Buerger's disease is a chronic, recurrent, segmental type of phlebitis and arteritis that occurs in remissions and exacerbations, mostly in the younger group of male smokers. While

Raynaud's disease occurs mostly in women, Buerger's disease is seen predominantly in men. There are a number of exceptions to this rule. This vascular disease spares no artery and may be found in the brain, heart, mesenteric vessels, and kidneys, in addition to the extremities. Histologically, it is a giant-cell arteritis and has the earmarks of an allergic inflammation. Transitions between Buerger's disease, polyarteritis nodosa, and lupus erythematosus are known to occur.

IMMUNIZATION AGAINST DIPHTHERIA

To the Editor:—*What is an effective and simple method of immunizing older children and adults against diphtheria and of giving booster shots so they gain good protection? Is the use of three intradermal injections of 0.1 cc. of fluid toxoid (or other preparation) two to three months apart satisfactory for immunization? Would preliminary skin testing be necessary or would merely asking about the allergic history be sufficient? What protection and reactions would result from giving a mixture of diphtheria and tetanus toxoid intradermally every two to three months for three injections for immunization and every four years as a booster? Would 0.05 cc. give satisfactory results?*

Jean-Maurice Poitras, M.D., New Bern, N. C.

Answer.—Before deciding to administer the immunizing agent to older children and adults it is advisable to perform Schick tests. Among the older age groups, it is likely that many will be Schick-negative, and for those an existing immunity to diphtheria can be assumed. Nevertheless, a higher percentage of adults are now susceptible than when diphtheria was a prevalent disease. Diphtheria immunization can be established by intradermal injection of fluid toxoid; however, two to three months after the third injection a Schick test should be performed to determine the status of the procedure. If special precautions seem desirable, a toxoid sensitivity test (Maloney) may be done before giving the immunization injections. For that purpose, 0.1 cc. of a 1:20 dilution of fluid diphtheria toxoid is injected intradermally; the results are checked at the end of 48 hours. In general, the same plan would apply to combined diphtheria and tetanus toxoids. For adults employed in hazardous occupations, it would be desirable to give 0.1 cc. of tetanus toxoid annually. Since the subcutaneous dose of diphtheria and tetanus fluid toxoids combined is only 0.5 cc., there would seem to be little advantage in resorting to the intracutaneous method if the Maloney test gives a negative result. It is questionable whether 0.05 cc. would be satisfactory as a booster dose for diphtheria immunity.

BLOOD GROUP O

To the Editor:—*Please advise me on the necessity of adding blood group specific substances A and B to neutralize anti-A and anti-B agglutinins in group O blood when used for persons of other blood groups.* *M.D., Illinois.*

Answer.—Group O blood, when transfused into recipients of other blood groups, may cause transfusion reactions because of high titers of the anti-A and anti-B agglutinins. For this reason Witebsky and associates (*J. A. M. A.* **116:**2654 [June 14] 1941; *J. A. M. A.* **128:**1091 [Aug. 11] 1945; *Blood* **5:**123, 1950) added the group-specific substances A and B routinely to neutralize these agglutinins. According to Klendshoj and Witebsky, no untoward effects ascribable to the addition of the A and B substances have been observed in more than 1,000 transfusions. In many blood banks these substances are now added routinely whereas in others they are added only if the isoagglutinin titers are not higher than 1:200. In some instances the titers of anti-A antibodies may be extremely high and may not be neutralized sufficiently by addition of the group-specific substances. These anti-A antibodies of very high titer behave like those observed in donors who have been actively immunized against the A factor. In these exceptional cases, these immune antibodies fixed complement and acted as hemolysins and their ability to agglutinate A cells was enhanced by the presence of normal human serum. (Ervin, D. M., and Young, L. E.: *Blood* **5:**61, 1950; Ervin, D. M.; Christian, R. N., and Young, L. E.: *Blood* **5:**553, 1950.) Thus, in general, neutralization of anti-A and anti-B agglutinins in group O blood by means of the group-specific substances can be recommended as a routine procedure, although it must be realized that in exceptional cases this procedure may not be successful. For this reason, if possible, transfusions of the same blood group should be given, and the use of the universal donor of blood group O must still be considered as sometimes being dangerous, even with the use of the neutralization procedure.

CHYLOTHORAX

To the Editor:—*A 33-year-old white man consulted me in 1949 about an acute rheumatoid arthritis affecting the fingers and later the left shoulder, right knee, and both ankles. The urine and blood cell counts were normal. The sedimentation rate was 18 mm. in one hour. The Wassermann test reaction was repeatedly negative. The patient had been diagnosed elsewhere as having undulant fever two years previously. Agglutination tests were performed by the state laboratory for brucellosis, typhoid, paratyphoid, and tularemia. Examination revealed, in addition to the rheumatoid arthritis, a bilateral hydrothorax and mild prostatitis showing 10 to 18 cells per high power field. Bilateral chest aspiration revealed a fatty opalescent fluid with little evidence of cellular structure. The chest roentgenogram following aspiration revealed no significant parenchymal lesion. The patient was discharged to his home and was given sodium salicylate therapy, but in January, 1952, he returned complaining of dyspnea. He was referred to a well-known clinic, where 1,500 cc. of fluid were removed from each chest cavity. The specific gravity of the chest fluid was 1.021 on the left and 1.026 on the right. The total cell counts were 1,000 and 1,300, respectively, with 37% polymorphonuclears and 63% lymphocytes. There was also a high fat content. A tuberculin test, cultures for acid-fast organisms and fungi, and inoculation of guinea pigs with the fluid were done, with negative results. The patient returned two weeks ago complaining of dyspnea on exertion. An upper gastrointestinal series was done, and the results were within normal limits. A peritoneoscopic examination was done, as the patient had gained 35 lb. (15.9 kg.) during the previous year. There was no ascites, and an adequate view of the liver showed a sharp margin with normal appearance. The spleen appeared normal. This patient is in good health, except for recurrent development of hydrothorax with a fluid high in fat content, which may well be called a chylothorax. It takes about six months for his chest to refill. Have I overlooked some means of therapy?*

Samuel B. Harper, M.D., Madison, Wis.

Answer.—The diagnosis of chylothorax seems justified in this case on the basis of a fluid with a high fat content. A history of recurrence of this effusion for longer than three years should rule out a malignant lesion. The absence of the usual evidence of tuberculosis and a negative tuberculin test tend to rule out tuberculosis. It is likely that this patient has a tear in the thoracic duct, which apparently spontaneously heals from time to time and then breaks open. No history of trauma is given, but at times relatively slight trauma, such as sudden hyperextension of the back or severe coughing spells in association with a fixation of the thoracic duct to the vertebrae, may cause a tear of the thoracic duct. Mediastinitis may also weaken the thoracic duct. A roentgenogram of the thoracic spine may show a lesion of the vertebrae. Therapy should be conservative at the onset. Repeated aspiration has successfully controlled the chylothorax. If the effusion persists and if the lung is expandable, tube drainage with suction is advised, first on one side and then on the other. This may obliterate the pleural space and prevent further leakage of chyle in the pleural cavity. Finally, if these measures fail and the chylothorax persists, a thoracotomy should be done, with ligation and/or resection of the duct. There have been several successful operations on the thoracic duct with cure of the chylothorax.

ARREST OF GROWTH

To the Editor:—*Have any studies been done to determine what percentage of the epiphysial plate it is necessary to destroy to completely inhibit epiphysial growth?*

M.D., Pennsylvania.

Answer.—Arrest of growth from an epiphysial disk depends more on the formation of a bony bridge connecting epiphysial and metaphysial bone than it does on destruction of any certain "percentage" of the cartilage plate. Even a small marginal bony connection that crosses the disk will arrest its growth on that side. If there are small bridges laterally and medially across the disk, symmetrical arrest of growth results. It is evident, then, that "percentage removal" of the disk is of importance only in so far as it aids in obtaining a bony connection between epiphysis and metaphysis.

WARNING AGAINST INTRAVENOUS USE OF DISTILLED WATER

To the Editor:—*An intravenous infusion of 1 liter of normal sodium chloride solution was administered to a patient, and an infusion of 1 liter of distilled water was ordered to follow this. Would this procedure subject the patient to any hazard? A statement has been made that irrigation of the urinary bladder with distilled water has been known to cause death as a result of intravascular hemolysis. Is this statement well founded on fact?*

M.D., Connecticut.

Answer.—Distilled water should never be given by the intravenous route, since it may cause intravascular hemolysis, which may be followed by lower nephron nephrosis and anuria. Gilman and Goodman (*Am. J. Physiol.* **118**:241, 1936) have produced even hemolytic anemia in animals by causing water retention by injection of large amounts of the antidiuretic principle of the posterior pituitary. Severe hemolysis with death of the patient due to lower nephron nephrosis with anuria has occurred also in some instances of transurethral resection of the prostate during which distilled water was used as irrigating fluid and entered the venous system.

GONORRHEA AND PENICILLIN

To the Editor:—*What is the consensus on whether there is an in vivo resistance to penicillin by any of the strains of Neisseria gonorrhoeae?*

M.D., Hawaii.

Answer.—At present, no evidence is available that N. gonorrheae has become resistant to penicillin in vivo. There have been some reports describing cases in which the clinical response to treatment with penicillin has been relatively slow or poor, but these results have not been correlated with demonstrable increase in resistance of the organism to penicillin. In many situations in which penicillin has appeared to produce an inadequate effect, the poor clinical results have been due not to infection with a resistant organism but rather to the use of too small a quantity of the drug for too short a time in persons with more deep-seated infection than a simple gonococcal urethritis in the acute stage. Acute gonococcal urethritis responds promptly to the administration of as little penicillin as 150,000 units of the crystalline form or 300,000 units of the procaine form given in a single injection. More deep-seated infections with the gonococcus, such as prostatitis, posterior urethritis, cervicitis, or acute or chronic salpingitis, require more antibiotic for cure than does uncomplicated acute urethritis. Although the daily dose administered in the acute and chronic phases of this type of infection may not differ much, the duration of treatment required to produce cure is greater when chronic gonorrhea is present. If such deep-seated or chronic infections are treated with the same dose of drug that is used in the management of acute, uncomplicated urethritis, the impression may be erroneously created by the slowness of the therapeutic response that the organism is resistant to penicillin.

ABDOMINAL PAIN AFTER AN APPENDECTOMY

To the Editor:—*In reviewing a series of communications on abdominal pain after appendectomy in Queries and Minor Notes (May 3, 1952, page 98; Sept. 6, 1952, page 66; Jan. 3, 1953, page 88; and March 28, 1953, page 1156), the impression is gained that a wide variety of explanations are available for development of this disorder.*

Injection into the discussion, in two of the communications, of the possible role of somatic influences is pertinent when analyzed on the basis of acceptable anatomic and physiological considerations known or postulated.

The work of Lewis and Kellgren stands out as the pioneering effort of the experimental study of pain from deep somatic structures. The methods employed by them are the most practical ones developed for this purpose and have been extensively used in subsequent investigations by others. Their observations led them to conclude that irritation of skeletal structures provides reference of pain and tenderness to similar tissues elsewhere, in accordance with a segmental pattern of distribution different from that of the overlying dermatome—an anatomical concept that has been adequately verified by others since then. They have reproduced, on a limited scale but in a reliable manner, the exact clinical features of angina of effort and intestinal colic by irritation in appropriate skeletal structures, thus establishing a relation that may be considered parallel to the problem under discussion, the relation of visceral pain to irritation of deep somatic tissues. Lewis and Kellgren have concluded further, ". . . that there is no special form of pain, referred or otherwise, and no special viscero-sensory or viscero-motor reflex, which is the hallmark of visceral disease. Pain of visceral and of somatic origin cannot be distinguished as such. Deep somatic and certain visceral structures are supplied by a common set of afferent nerves (including pain nerves), stimulation of which produces similar pain and many similar reflex phenomena; this common system is responsible for all the pain and referred phenomena of visceral disease. Variations in reaction depend chiefly upon strength and duration of stimulus and upon the segmental derivation of the afferent fibers stimulated."

The anatomic and physiological principles postulated by Lewis and Kellgren, together with the similarity described by them between visceral and somatic pain, appear to offer a solution for the problem under consideration. It is necessary, however, to recognize and accept a broader view of the mechanism operative in referred phenomena. Thus, telalgia includes referred pain and referred tenderness, the two phenomena occurring, as a rule, simultaneously and arising from the same source of painful impulses, although differing widely in the manner of development and progression. The generally accepted scope of this term is apparently restricted to "reference in continuity," which embraces only a minor fraction of the total extent of these processes. It is necessary to include the occurrence of sclerotomic reference from deep somatic structures as the major portion of such activities.

There is nothing impressive about the anatomic features described by the correspondents to account for the clinical developments. It appears desirable to call attention to a more significant form of structural change, occurring with marked regularity at one or both of two sites in the lower part of the back, consisting of fibrosis of subfascial fat, with adhesions between this tissue and the overlying lumbodorsal fascia. From these sites of pathological change, pain and tenderness can be referred to other portions of the back, the lower and upper extremities, the neck, and the chest, resulting in a variety of clinical pictures. In addition, autonomic concomitants frequently develop from the afferent impulses, thus adding to the severity and complexity of the clinical manifestations due to somatic nerve reactions (Journal Lancet, *February, 1953*). *The entire chain of developments can be eliminated by a relatively simple operative procedure consisting, in surgical principle, of deafferentation of the tissue at the site of pathological change.*

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